

**ENVIRONMENTAL ASSESSMENT,
REGULATORY IMPACT REVIEW,**

AND

FINAL REGULATORY FLEXIBILITY ACT ANALYSIS

FOR A FINAL RULE

TO

**IMPLEMENT THE BOTTLENOSE DOLPHIN TAKE REDUCTION PLAN AND
REVISE THE LARGE MESH SIZE RESTRICTION UNDER THE MID-ATLANTIC
LARGE MESH GILLNET RULE**

April 2006

**United States Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southeast Regional Office
Protected Resources Division**

**FINDING OF NO SIGNIFICANT IMPACT (FONSI)
to Implement the BDTRP and Amend
the Mid-Atlantic Large Mesh Gillnet Rule (50 CFR 223.206(d)(8))**

SUMMARY: An environmental assessment (EA) was prepared to assess potential environmental impacts associated with a NMFS final rule to reduce serious injury and incidental mortality of the Western North Atlantic coastal bottlenose dolphin stock from Category I and II fisheries by implementing a Bottlenose Dolphin Take Reduction Plan (BDTRP) under the Marine Mammal Protection Act (MMPA); and to provide consistency amongst state and federal large mesh regulations by amending the mid-Atlantic large mesh gillnet rule (50 CFR 223.206(d)(8)) under the Endangered Species Act (ESA). The following general requirements will be implemented by the Preferred Alternative (Alternative 7): time/area gillnet restrictions, gear proximity (fishermen must stay within a set distance of gear); gear modifications; non-regulatory conservation measures; and a revision to the large mesh gillnet size restriction.

PURPOSE AND NEED: The need and purpose of this action is to meet the following two objectives under two different statutory authorities: (1) Under the MMPA, the purpose of the action is to implement the BDTRP. The need for implementing the BDTRP is to reduce, within six months of implementation of the BDTRP, the incidental mortality and serious injury of the western North Atlantic coastal bottlenose dolphin (*Tursiops truncatus*) stock of nine commercial fisheries to below the Potential Biological Removal (PBR) level for each management unit and to provide a framework to meet the zero mortality rate goal. This objective will be met through regulatory and non-regulatory management measures; and (2) Under the ESA, the purpose of the action is to amend the mid-Atlantic large mesh gillnet rule. The need for the amendment is to provide consistency in state and federal large mesh gillnet regulations in the mid-Atlantic and facilitate compliance with these regulations. This objective will be met by revising the large mesh gillnet size restriction from the current greater than 8-inch (20.3 cm) stretched mesh size to 7-inches (17.8 cm) or larger stretched mesh.

These objectives will be accomplished via the implementation of the measures as outlined in Alternative 7.

SUMMARY OF ACTION: The Preferred Alternative represents the final rule that will constitute the Agency's final BDTRP for seven management units of the coastal bottlenose dolphin stock. By implementing the final BDTRP, serious injury and mortality of coastal bottlenose dolphins will be reduced in all management units to below PBR. The BDTRP affects the following Category I and II commercial fisheries, as described in the List of Fisheries (LOF): mid-Atlantic coastal gillnet fishery, Virginia pound net fishery, mid-Atlantic haul/beach seine fishery, Atlantic blue crab pot/trap fishery, North Carolina inshore gillnet fishery, North Carolina roe mullet stop net fishery, North Carolina long haul seine fishery, Southeast Atlantic gillnet fishery, and Southeastern U.S. Atlantic shark gillnet fishery. The BDTRP is expected to reduce serious injury and mortality of coastal bottlenose dolphins incidental to these fisheries below PBR within six months of implementation and to create a framework to reduce the incidental

mortality or serious injury to insignificant levels approaching a zero mortality and serious injury rate within 5 years of implementation, while considering the economics of the fishery, the availability of existing technology, and existing state and regional fishery management plans. Through the implementation of the BDTRP, NMFS is complying with MMPA section 118 by enacting the gillnet regulatory management measures and non-regulatory conservation measures recommended by the Bottlenose Dolphin Take Reduction Team (BDTRT).

The Preferred Alternative will also amend the mid-Atlantic large mesh gillnet rule (67 FR 71895). The amendment is to include large mesh gillnets greater than or equal to 7-inches (17.8 cm) stretched mesh instead of greater than 8-inches (20.3 cm) stretched mesh. This will provide consistency amongst the BDTRP, the Harbor Porpoise Take Reduction Plan, and North Carolina state regulations and facilitate compliance with these regulations.

The EA was developed as an integrated document including a Regulatory Impact Review, Social Impact Review, and Initial/Final Regulatory Flexibility Analysis. The EA considered seven Alternatives to accomplish the purpose and need, including Alternative 2, which reflects the proposed rule (69 FR 65127) to implement the BDTRP and amend the mid-Atlantic large mesh gillnet rule, and Alternative 7, which reflects the final rule. Alternative 7, or the Preferred Alternative, is deemed the most equitable because it meets the short-term goal of the MMPA and provides a framework for meeting the long-term goal of the MMPA, while considering the potential impacts to the human communities and affected commercial fisheries. The Preferred Alternative is consistent with the BDTRT's Consensus Recommendations and considers and incorporates public comments and additional information received during the public comment period for the proposed rule.

Based on the analysis in this EA and by implementing the Preferred Alternative, NMFS determined that the Preferred Alternative does not constitute a major federal action that will significantly affect the quality of the human or biological environments within the meaning of the National Environmental Policy Act (NEPA). Therefore, the preparation of an environmental impact statement (EIS) is not required.

ADDRESS FOR FURTHER INFORMATION:

Single copies of the EA and further information are available at the following address:

Protected Resources Division
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263 13th Street South
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BACKGROUND:

BDTRP

The 1994 amendments to the MMPA require the preparation and implementation of take reduction plans for strategic marine mammal stocks that interact with Category I or II fisheries. A strategic stock is a stock: (1) for which the level of direct human-caused mortality exceeds the PBR level; or (2) which is declining and is likely to be listed under the Endangered Species Act (ESA) in the foreseeable future; or (3) which is listed as a threatened or endangered species under the ESA, or as depleted under the MMPA. The Western North Atlantic coastal bottlenose dolphin stock is a strategic stock with frequent or occasional interactions with nine Category I and II fisheries in which the combined level of incidental mortality and serious injury from these fisheries exceeds the PBR. A take reduction team and plan are therefore required to be formed under the MMPA.

A notice published in the *Federal Register* on October 24, 2001 (66 FR 53782) announced the establishment of the BDTRT and the first BDTRT meeting. The BDTRT met five times before delivering Consensus Recommendations to NMFS on May 7, 2002. The BDTRT met a sixth time in April 2003 to review updated bottlenose dolphin abundance information and augment the original recommendations where the BDTRT's recommendations did not meet the statutory requirements of the MMPA. The BDTRT, as detailed in its May 1, 2003 report, reached consensus on additional measures to meet PBR for all seven bottlenose dolphin management units.

In development of their Consensus Recommendations, the BDTRT met on the following dates: November 6-8, 2001; January 23-25, 2002; February 27-March 1, 2002; March 27-28, 2002; April 23-25, 2002; and April 1-3, 2003. NMFS also conducted two fishery interaction workshops on May 15-16, 2001, and July 11-12, 2001, in which the BDTRT, interested parties, and members of the public were invited to participate.

NMFS incorporated the majority of the BDTRT's Consensus Recommendations into a proposed rule to implement the BDTRP and amend the mid-Atlantic large mesh gillnet rule, which was published in the *Federal Register* on November 10, 2004 (69 FR 65127). The proposed rule contained two actions under two different regulatory authorities: (1) Implementation of the BDTRP under the MMPA; and (2) Amendments to the mid-Atlantic large mesh gillnet rule (67 FR 71895) under the ESA. The public comment period was for 90 days. Two public hearings and a BDTRT meeting were held during this time. NMFS received 4,140 public comments through email, public hearings, written letters and faxes, and petitions.

NMFS reviewed and analyzed each public comment and additional information received during the public comment period and revised the EA and final rule accordingly. As a result of review of this additional information, the proposed operating requirements for beach gear (beach seine, roe mullet stop net, and nearshore gillnet fisheries) and requirements for gear marking were not included in the Preferred Alternative, and therefore, the final rule. The final rule includes restrictions for small, medium, and large mesh gillnets in each of the seven management units and non-regulatory measures, as detailed in Section 4.7 for the Preferred Alternative (Alternative 7). All public comments are discussed in the comment response section of the final rule.

Mid-Atlantic Large Mesh Gillnet Rule

Under the ESA, all sea turtles that occur in United States waters are listed as either endangered or threatened under the Endangered Species Act of 1973 (ESA). The ESA and its implementing regulations prohibit the taking of sea turtles, even incidentally, except as identified in 50 CFR 223.206. The incidental take of endangered species may be authorized only by an incidental take statement or an incidental take permit issued pursuant to section 7 or 10 of the ESA.

On December 3, 2002, NMFS published a final rule (67 FR 71895) establishing seasonally-adjusted gear restrictions by closing portions of the mid-Atlantic Exclusive Economic Zone (EEZ) waters to fishing with gillnets with a mesh size larger than 8-inch (20.3-cm) stretched mesh to protect migrating sea turtles by preventing further takes of sea turtles in the monkfish fishery off North Carolina and Virginia. This final rule was unchanged from the interim final rule published March 21, 2002 (67 FR 13098). At the time it was published, NMFS limited the interim final rule to federal waters because there was limited evidence that the primary fishery involved, monkfish, was prosecuted in state waters. Following the implementation of the interim final rule, NMFS was informed that some monkfish gillnet effort shifted from federal waters to North Carolina state waters and that a limited Virginia state water fishery also existed. This left nearshore waters off North Carolina and Virginia without adequate measures to prevent incidental takes of sea turtle from large mesh gillnets.

Therefore, in the proposed rule published on November 10, 2004 (69 FR 65127), NMFS proposed to amend the final rule to extend the seasonally-adjusted closures into North Carolina and Virginia state waters, with a conditional striped bass exemption, and revise the large mesh gillnet size restriction to include gillnets with a mesh size of 7-inches or greater. Two public hearings were conducted during the 90 public comment period and were held in New Bern, North Carolina, and Virginia Beach, Virginia. The Agency received 4,140 verbal and written comments.

NMFS reviewed and analyzed public comments received during the public comment period, as well as additional information received during the review process, and revised the EA and final rule accordingly. As a result of additional information received regarding changes in fishery effort and state fishery management regulations, the seasonally-adjusted closures for North Carolina and Virginia state waters were not included in the final rule. However, the final rule and EA still include the revision to the large mesh gillnet size restriction, and these changes are reflected in Section 4.7 for the Preferred Alternative (Alternative 7). All comments are discussed in the comment response section in the final rule.

ALTERNATIVES CONSIDERED: The alternatives chosen for technical analysis are within the scope of the purpose and need for that action, technically feasible, and were discussed by the BDTRT. NMFS utilized gear research results, published and peer reviewed scientific reports, and BDTRT recommendations to develop the alternatives, as well as public comments and additional information received during the public comment period to develop the Preferred Alternative. In brief, the options NMFS considered for detailed analyses include:

Alternative 1: No-Action Alternative:

The No-Action Alternative would maintain the current regulations associated with the nine Category I and II commercial fisheries interacting with coastal bottlenose dolphins. It would also maintain the current seasonally-adjusted closures and large mesh gillnet size restriction under the mid-Atlantic large mesh gillnet rule (67 FR 71895). The current regulations do not contain sufficient management measures to ensure bottlenose dolphin serious injury and mortality is reduced below PBR for all management units, as mandated by the MMPA. Therefore, NMFS is not implementing Alternative 1 because it would not meet MMPA requirements.

Alternative 2: Proposed Rule

This Alternative reflects the proposed rule published on November 10, 2004 (69 FR 65127), and would implement the majority of the BDTRT's regulatory Consensus Recommendations and all the non-regulatory recommendations. It would also amend the mid-Atlantic large mesh gillnet rule to extend seasonally-adjusted closures into North Carolina and Virginia state waters, with a striped bass conditional exemption, and revise the large mesh definition to include 7-inch (17.8 cm) or larger stretched mesh. Under this Alternative, gillnet, beach gear, and gear marking requirements would be implemented, as well as non-regulatory conservation measures, to reduce serious injury and mortality of coastal bottlenose dolphins below PBR in all management units within six months of implementation of the final rule. Alternative 2 would also reduce incidental takes of sea turtles from large mesh fishing by amending the mid-Atlantic large mesh gillnet rule under the ESA to extend the current seasonally-adjusted closures in North Carolina and Virginia state waters, seaward of the COLREGS lines. Additionally, the rule would revise the large mesh gillnet size restriction to include gillnets with a mesh size of 7 inches (17.8 cm) or greater stretched mesh to provide consistency amongst state and federal regulations and ease for commercial fishermen complying with these regulations.

NMFS is not implementing Alternative 2, even though it provides sufficient bycatch reduction of bottlenose dolphins and sea turtles, based on comments received during the public comment period indicating that this Alternative would: (1) Inadvertently impact nearshore gillnet and other commercial fishermen that were not the intent of the BDTRT Consensus Recommendations; and (2) Create redundant regulations for gear marking, as each state affected by the BDTRP has sufficient gear marking requirements to meet NMFS' purpose of proposing gear marking. Additional information received during and after the comment period also indicated that: (1) The proposed measures for beach gear are not currently necessary to reduce bottlenose dolphin serious injury and mortality to below PBR based on a review of the most recent bycatch estimates provided by Palka and Rossman (2005); and (2) The proposed seasonally-adjusted closures are no longer necessary because North Carolina Department of Marine Fisheries began developing state management measures for large mesh gillnet fisheries that will provide equal or greater protection to sea turtles than the proposed Federally-imposed closures. Furthermore, the Virginia Marine Resources Commission enacted regulations to further manage large mesh gillnets in state waters and to eliminate monkfish gillnetting, the fishery of primary concern for incidental capture of sea turtles.

Alternative 3:

This Alternative would prohibit gillnet fishing within 3 km from shore in all management units and require gear marking for all affected commercial fisheries. NMFS is not implementing Alternative 3 because it does not sufficiently reduce bottlenose dolphin serious injury and mortality in the Summer Northern North Carolina Management Unit, and it would impose a significant economic burden on the human communities and fishing industries involved. This Alternative also does not consider the BDTRT's Consensus Recommendations for regulatory management measures. Furthermore, gear marking is not necessary as all states affected by the BDTRP currently maintain sufficient gear marking requirements.

Alternative 4:

This Alternative would allow gillnet fishing in state waters for no more than 12 consecutive hours, either night or day, for all management units. It would also require gear marking for all affected commercial fisheries. NMFS is not implementing Alternative 3 because it does not sufficiently reduce bottlenose dolphin serious injury and mortality in the Summer Northern North Carolina Management Unit, and it would impose a significant economic burden on the human communities and fishing industries involved. This Alternative also does not consider the BDTRT's Consensus Recommendations for regulatory management measures. Furthermore, gear marking is not necessary as all states affected by the BDTRP currently maintain sufficient gear marking requirements.

Alternative 5:

This Alternative would prohibit all gillnet fishing in state waters year-round in all management units and require gear marking for all affected commercial fishing operations. NMFS is not implementing this Alternative, even though it would provide the largest reduction of serious injury and mortality to bottlenose dolphins, because of the significant economic burden it would impose on the human communities and commercial fisheries involved. This Alternative also does not consider the BDTRT's Consensus Recommendations for regulatory management measures. Furthermore, gear marking is not necessary as all states affected by the BDTRP currently maintain sufficient gear marking requirements.

Alternative 6: BDTRT's Draft BDTRP

This Alternative would implement all of the BDTRT's Consensus Recommendations for both regulatory and non-regulatory management measures. Alternative 6 would require gillnet and beach gear requirements in the form of time/area restrictions, proximity requirements, a requirement to haul small mesh gillnet gear once per 24 hours in certain management units, mandatory bycatch certification, and gear modifications. It would also include gear marking requirements for all affected commercial fisheries. NMFS is not implementing this Alternative, even though it would provide sufficient reduction of serious injury and mortality to bottlenose dolphins, because of the significant economic burden it would impose on the human communities and commercial fisheries involved. Specifically, NMFS believes the recommendation to implement a mandatory certification for all fishermen and gear marking for all gear types would impose an undue burden on the affected fishermen. Furthermore, gear

marking is not necessary as all states affected by the BDTRP currently maintain sufficient gear marking requirements. NMFS also believes the recommendation to require fishermen to haul gear once every 24 hours in the small mesh gillnet fishery in the North Carolina Winter Mixed Management Unit and the Summer Northern North Carolina Management Unit would be difficult to enforce and result in limited benefit because 98 percent of small mesh gillnets currently soak for less than 24 hours.

Alternative 7 - Preferred Alternative:

The Preferred Alternative is representative of the final rule and will implement a modified Alternative 2 and 6. It will include regulatory measures for small, medium, and large mesh gillnets and non-regulatory conservation measures as proposed in the proposed rule (Alternative 2). The Preferred Alternative will also include an amendment to the mid-Atlantic large mesh gillnet rule to revise the large mesh gillnet size restriction to include large mesh gillnets with 7-inches (17.8 cm) or greater stretched mesh. This Alternative varies from Alternative 2 as it does not include operating requirements for beach gear (beach seine, roe mullet stop net, and nearshore gillnet), requirements for gear marking, and an extension of seasonally-adjusted closures into North Carolina and Virginia state waters. These management measures are not included in the Preferred Alternative based on comments received during the public comment period and additional information received during the review process. This Alternative is expected to reduce serious injury and mortality of bottlenose dolphins equivalent to that of Alternative 2, and therefore, meet requirements under the MMPA. It will also provide consistency among state and federal regulations and make it easier for commercial fishermen to comply with the regulations.

The Preferred Alternative varies from Alternative 6, in addition to the differences mentioned above for Alternative 2 in that it does not include gear marking for all affected commercial fisheries, a requirement to haul gear once per 24 hours in small mesh fisheries in the Summer and Winter North Carolina Management Units, and mandatory bycatch reduction training for all affected commercial fishermen. Discussions on the omission of these management measures were included in the proposed rule.

CONSIDERATION OF NOAA AND CEQ SIGNIFICANT IMPACT CRITERIA:

National Oceanic and Atmospheric Administration (NOAA) Administrative Order (NOA) 216-6 (May 20, 1999) contains criteria for determining the significance of the impacts of a propose and final action. In addition, the Council on Environmental Quality regulations (CEQ) at 40 CFR 1508.27 state that the significance of an action should be analyzed both in terms of “context” and “intensity.” Each criterion listed below is relevant to making a finding of no significant impact and has been considered individually, as well as in combination with the others. The significance of this action is analyzed based on the NAO 216-6 criteria and CEQ’s context and intensity criteria. These include:

- (1) Can the proposed action reasonably be expected to cause substantial damage to the ocean and

coastal habitats and/or essential fish habitat as defined under the Magnuson-Stevens Fishery Management Act and identified in Fishery Management Plans?

Response: It can reasonably be expected that the Preferred Alternative to implement the BDTRP will not cause substantial damage to oceanic or coastal habitats and/or essential fish habitats. The provisions of the BDTRP focus on reducing fishery effort and regulating fishery practices to limit bottlenose dolphin interactions with the gillnet fisheries of the mid-Atlantic. Deployment of gillnets result in minimal impact to habitat as they do not cause substantial disturbance of sediments, alteration of water flow, impacts to vegetation, or other changes to the physical environment. Additionally, the provisions of the BDTRP may limit activities of the fisheries being affected, and therefore, any potential habitat impacts would be further reduced.

(2) Can the proposed action be expected to have a substantial impact on biodiversity and/or ecosystem function within the affected area (e.g., benthic productivity, predator-prey relationships, etc.)?

Response: The proposed action is not expected to have a substantial impact on biodiversity or ecosystem function as the need and purpose, as outlined in Section 1.1, is to benefit coastal bottlenose dolphins by reducing serious injury and mortality incidental to commercial fishing. The conservation measures, as detailed in Section 4.7, to accomplish this need are designed to reduce dolphin/fishery interactions through time/area restrictions, gear proximity requirements, and gear modifications. These conservation measures will inherently benefit other marine mammals and protected species, such as sea turtles, that are within the distribution area of the conservation measures for dolphins. Additionally, these conservation measures may reduce fishing effort and harvest in some areas, which may increase prey availability, thereby potentially benefitting predator-prey relationships.

(3) Can the proposed action reasonably be expected to have a substantial adverse impact on public health or safety?

Response: The Preferred Alternative is not expected to impact public health or safety given that these management measures were developed in cooperation with fishing industry, state governments, academia and other federal agencies, with fishing practices and techniques, including safety, as a consideration. Furthermore, the participation of the fishing industry was instrumental in ensuring that gear restrictions included in the Preferred Alternative could be implemented safely. Additionally, research on gear use and modification will continue to ensure both safety considerations for commercial fishery use and reduced entanglements of protected species.

(4) Can the proposed action reasonably be expected to adversely affect endangered or threatened species, their critical habitat, marine mammals, or other non-target species?

Response: The Preferred Alternative is not expected to have adverse affects on

endangered or threatened species or designated critical habitat, as determined in the ESA section 7 consultation for this rulemaking. Rather, the potential affects are expected to be beneficial to protected species within the action area because the basis for this Preferred Alternative is to reduce serious injury and mortality to coastal bottlenose dolphins. It is expected that other marine mammals, to the extent their distribution and abundance coincides with concentrations of the coastal bottlenose dolphin stock, will benefit from the imposition of these management measures. There is no evidence that other aquatic threatened or endangered species will be adversely affected by these gear restrictions and, in fact, may have a beneficial impact on these species.

(5) Are significant social or economic impacts interrelated with natural or physical environmental effects?

Response: By fulfilling the needs and purposes of this EA, as outlined in Section 1.1, the Preferred Alternative is not expected to have significant social or economic adverse effects, especially as it was modified from the Proposed Action based on public comment and additional information received. The overall economic impact is expected to be minimal in comparison to the overall fisheries harvests across all fishery sectors analyzed. As indicated in Section 5.5, the Preferred Alternative was analyzed for reductions in each fishing sector up to 50 percent. Assuming the full 50 percent reduction, total harvest reductions across all areas and fisheries are estimated at \$1.009 million. This estimate is considered an upper bound because it incorporates the maximum harvest reduction and does not account for redirection of harvest effort. Furthermore, in Section 5.6 of the EA, NMFS determined that this action does not constitute a significant regulatory action under E.O. 12866.

(6) Are the effects on the quality of the human environment likely to be highly controversial?

Response: The Preferred Alternative is expected to have a low degree of controversy associated with its implementation since the BDTRP was developed in conjunction with a take reduction team represented by academia, non-governmental organizations, all affected commercial fisheries, state, federal, and local representatives, and fishery management councils. The impact of gear restrictions may be controversial to a small segment of the fishing community in areas in which night closures or proximity requirements are instituted, but the overall effects on the human environment are not expected to be highly controversial. These gear restrictions are limited in geographic area, seasonal in some areas, and implemented in an effort to facilitate the coexistence of fishing activity, as they were developed in a cooperative nature. Furthermore, the impact of the final rule was decreased in scope from the proposed rule, as the beach gear, gear marking, and seasonally-adjusted closures are not included in the final rule due to do comments and additional information received during the public comment period. These factors restrict the scope of the effects on the human environment.

(7) Can the proposed action reasonably be expected to result in substantial impacts to unique areas, such as historic or cultural resources, park land, prime farmlands, wetlands, wild and

scenic rivers, essential fish habitat, or ecologically critical areas?

Response: The Preferred Alternative is not expected to negatively impact any unique characteristics of the geographic area (e.g., historic resources, park lands, prime farmland, wetlands, wild and scenic rivers, ecologically critical areas). As described in Section 3 of the EA, the environmental area affected by the Preferred Alternative is all tidal and marine waters within 6.5 nmi from shore from the New York/New Jersey border southward to Cape Hatteras, North Carolina, and within 14.6 nautical miles (27 km) of shore from Cape Hatteras southward to, and including, the east coast of Florida. This area does not include waters landward of the first bridge over any embayment, harbor, or inlet, and in cases where there is not bridge, landward of the 72 COLREGS line. Therefore, historic resources, park lands, prime farmland, wetlands and scenic rivers are not included in the action area. The unique characteristic of the geographic area impacted by the Preferred Alternative includes the ocean floor and water column, which supports an abundance of life forms of commercial and non-commercial value. The Preferred Alternative is anticipated to positively impact the unique characteristics of the area by preserving the diversity of the environment in terms of protected species populations, and, possibly, reducing total landings of the various target species. The value of this area was considered in the essential fish habitat consultation process, and its unique characteristics will not be impacted by this Preferred Alternative because the conservation measures will be mostly limited to nearshore and state waters.

(8) Are the effects on the human environment likely to be highly uncertain or involve unique or unknown risks?

Response: The Preferred Alternative is expected to have a moderate degree of uncertain effects or unknown risks, but these were analyzed with the best available information. As noted in Section 5.3.8, the economic impacts of the Preferred Alternative assumed a 50 percent reduction in total fishery harvests, which represents an upper bound impact. The uncertainty in impacts below 50 percent are difficult to determine because of the complexity of multiple datasets and management units, with an overlap in fisheries and harvest levels across management units, and the variety of management measures being imposed. Any affects from the Preferred Alternative on the human environment are not unique, however, as there are currently several fishery management measures in place in the mid-Atlantic for these fisheries, such as the Harbor Porpoise Take Reduction Plan, North Carolina Department of Marine Fisheries and Virginia Marine Resources Commission regulations, and fishery management plans.

(9) Is the proposed action related to other actions with individually insignificant, but cumulatively significant impacts?

Response: As analyzed in Section 4.7.3, the Preferred Alternative is not anticipated to be cumulatively significant when compared with other, individual actions. As detailed in Table 43, individual actions were scored based on their significance of impact: low significance was 12-23

points, medium significance was 24-35 points, and high significance was greater than or equal to 36 points. The total known cumulative impact of the Preferred Alternative with other known, individual impacts was 24 points.

(10) Is the proposed action likely to adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural or historical resources?

Response: The Preferred Alternative is not expected to have adverse effects on scientific, cultural, or historical resources because it is focused only on modifications to current fishery practices. As noted in Section 3, the affected environment is mostly nearshore and state waters from the New York/New Jersey border southward to, and including, the east coast of Florida and does not affect land-based structure. Therefore, the affected environment does not include areas listed in the National Register of Historic Places. Compliance with these restrictions is not likely to result in the permanent loss or destruction of resources, as the restrictions were developed by the BDTRT to reduce serious injury and mortality to bottlenose dolphins and minimize impacts on other species.

(11) Can the proposed action reasonably be expected to result in the introduction or spread of a nonindigenous species?

Response: The Preferred Alternative is not expected to result in the introduction or spread of nonindigenous species. The take reduction measures implemented in the BDTRP are designed to reduce serious injury and mortality to coastal bottlenose dolphins incidental to commercial fishing, and therefore, do not relate to the introduction or spread of non-indigenous species.

(12) Is the proposed action likely to establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration?

Response: The Preferred Alternative is not expected to have any precedent-setting effects since the information was analyzed to accomplish the short- and long-term goals as required under the MMPA. The Preferred Alternative is being implemented to achieve specific objectives and is, therefore, not expected to establish a precedent for future actions. It may, however, serve as a take reduction plan model to design conservation measures for other marine mammal species impacted by commercial fisheries, as required by the MMPA.

(13) Can the proposed action reasonably be expected to threaten a violation of federal, State, or local law or requirements imposed for the protection of the environment?

Response: The Preferred Alternative is not expected to have violations to federal, state, or local environmental laws because they are being implemented to reduce impacts on bottlenose dolphins, and they comply with Federalism and Coastal Zone Management Act requirements.

Federal, state, and local representatives participated on the BDTRT in developing the Consensus Recommendations for the BDTRP. NMFS further coordinated with state representatives from Virginia and North Carolina during and after the public comment period for the proposed rule to ensure state and Federal regulations complemented one another and are not duplicative. Additionally, after receiving additional information and public comments during the comment period, NMFS is not including the proposed gear marking requirements because all states affected by the BDTRP currently maintain sufficient gear marking requirements. Likewise, NMFS is not including the proposed seasonally-adjusted closures in North Carolina and Virginia because these states have taken or are in the process of taking regulatory actions that negate the need for federal regulations. Finally, the Preferred Alternative to revise the large mesh gillnet size restriction under the mid-Atlantic large mesh gillnet rule will provide more consistency amongst state and federal regulations by aligning the “large mesh gillnet” definition.

(14) Can the proposed action reasonably be expected to result in cumulative adverse effects that could have a substantial effect on the target species or non-target species?

Response: The Preferred Alternative is not expected to result in cumulative adverse effects to the affected target or non-target species, as these measures may reduce fishing effort in some locations. The take reduction measures implemented in the BDTRP are also not expected to significantly alter the manner in which the fisheries are prosecuted, as the management measures are in the form of night prohibitions, proximity requirements, and gear length restrictions. These measures should ultimately reduce the amount of gear in the water for longer periods of time. Beach gear operating requirements for the stop net fishery in the proposed rule raised concerns of creating bycatch of non-target species. A study is being conducted in the fall stop net fishery to examine the bycatch potential of non-target species if these management measures were implemented in the future. Until the results can be analyzed, beach gear operating requirements for the stop net fishery and beach seine fisheries will not be implemented through the Preferred Alternative.

DETERMINATION:

In view of the information presented in this document and the analysis contained in the supporting Environmental Assessment prepared for the final rule implementing the BDTRP and amending the mid-Atlantic large mesh gillnet rule, it is hereby determined that the above-mentioned final rule will not significantly impact the quality of the human environment as described above and in the Environmental Assessment. In addition, all beneficial and adverse impacts of the proposed action have been addressed to reach the conclusion of no significant impacts. Accordingly, preparation of an EIS for this action is not necessary.

APR 19 2006



William T. Hogarth, Ph.D.
Assistant Administrator
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Date

Environmental Assessment, Regulatory Impact Review, and Final Regulatory Flexibility Act Analysis for a Final Rule to Implement the Bottlenose Dolphin Take Reduction Plan and Revise the Large Mesh Gillnet Size Restriction Under the Mid-Atlantic Large Mesh Gillnet Rule.

Lead Agency: National Marine Fisheries Service (NMFS)

Action: The purposes of this action, which are enacted under two different regulatory authorities, are to: (1) Reduce the incidental mortality and serious injury (bycatch) of the western North Atlantic coastal bottlenose dolphin stock in the mid-Atlantic coastal gillnet fishery and eight other coastal fisheries operating within the dolphin's distribution under the Marine Mammal Protection Act by implementing the Bottlenose Dolphin Take Reduction Plan; and (2) Align current state and federal large mesh gillnet size restrictions, thereby, providing consistency in regulations and ease for commercial fishermen complying with several regulations in the mid-Atlantic by amending, under the ESA, the current large mesh size restriction in the Mid-Atlantic large mesh gillnet rule (50 CFR 223.206(d)(8)) from the current greater than 8-inch (20.3 cm) stretched mesh size to include 7-inches (17.8 cm) or larger stretched mesh. The purposes will be met by implementing gillnet effort reduction, gear or gear deployment modifications, gear proximity (fishermen must stay within a set distance of gear), gear length, large mesh gillnet size change, and outreach and education measures.

Type of Statement: Environmental Assessment, Regulatory Impact Review, Final Regulatory Flexibility Analysis

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Abstract: The majority of the Atlantic east coast commercial fisheries are managed under the authority of either individual states and/or the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA). These fisheries are also subject to the requirements of the Marine Mammal Protection Act (MMPA) and the Endangered Species Act (ESA). The 1994 amendments to the MMPA require the preparation and implementation of Take Reduction Plans (TRPs) for strategic marine mammal stocks that interact with Category I or II fisheries. The purposes of the ESA, as stated in Section 2(b), are to provide a means whereby the ecosystems upon which endangered or threatened species depend may be conserved, to provide a program for

the conservation of such endangered or threatened species, and to take such steps as may be appropriate to achieve the treaties and conventions set forth in the Act.

This rulemaking combines two actions under different regulatory authorities, the MMPA and ESA. The action under the MMPA is necessary because the western North Atlantic coastal bottlenose dolphin stock, *Tursiops truncatus*, is a strategic stock in which the serious injury and mortality incidental to nine Category I and II fisheries is exceeding PBR levels. The Preferred Alternative will implement the final BDTRP, which contains regulatory and non-regulatory management measures to directly reduce bycatch of bottlenose dolphins incidental to these fisheries. Regulatory measures will achieve the short-term goal of the MMPA and include gillnet effort reduction, gear tending requirements, gear or gear deployment modifications for small, medium, and large mesh gillnets in seven management units from New Jersey through the east coast of Florida. Non-regulatory measures will also help meet the short-term goal and provide a framework for meeting the long-term goal of the MMPA. Non-regulatory measures include continued research and monitoring, enforcement of regulations, outreach to fishermen, and a collaborative effort with states to remove derelict crab trap/pot gear.

The Preferred Alternative also contains an action under the ESA to amend the current large mesh gillnet size restriction in the mid-Atlantic large mesh gillnet rule from greater than 8-inch (20.3 cm) stretched mesh to 7-inches (17.8 cm) or larger stretched mesh. This action is intended to provide consistency in state and federal management of large mesh gillnets and facilitate compliance of commercial fishermen with these regulations.

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1.0 INTRODUCTION

1.1 Purpose and Need

The need and purpose of this action is to meet the following two objectives under two different statutory authorities: (1) under the MMPA, the purpose of the action is to implement the BDTRP. The need for implementing the BDTRP is to reduce, within six months of implementation of the BDTRP, the incidental mortality and serious injury of the western North Atlantic coastal bottlenose dolphin (*Tursiops truncatus*) stock of nine commercial fisheries to below the Potential Biological Removal (PBR) level for each management unit and to provide a framework to meet the zero mortality rate goal. This objective will be met through regulatory and non-regulatory management measures; and (2) under the ESA, the purpose of the action is to amend the mid-Atlantic large mesh gillnet rule. The need for the amendment is to provide consistency in state and federal large mesh gillnet regulations in the mid-Atlantic and facilitate compliance with these regulations. This objective will be met by revising the large mesh gillnet size restriction from the current greater than 8-inch (20.3 cm) stretched mesh size to 7-inches (17.8 cm) or larger stretched mesh.

These objectives will be accomplished via the implementation of the measures as outlined in Alternative 7.

1.2 Management History

1.2.1 Combined Actions Under Two Different Regulatory Authorities

The proposed rule published on November 10, 2004 (69 FR 65127) combined two actions under different regulatory authorities, which were to: (1) implement the BDTRP under the Marine Mammal Protection Act (MMPA); and (2) amend the mid-Atlantic large mesh gillnet rule by extending the existing seasonally-adjusted closures to North Carolina and Virginia state waters and revise the existing large mesh gillnet size restriction from greater than 8-inch (20.3 cm) stretched mesh to include 7-inch (17.8 cm) stretched or larger mesh under the Endangered Species Act (ESA).

The two actions were combined under one rulemaking process because the seasonally-adjusted closures for North Carolina and Virginia state waters were originally believed necessary to bring dolphin bycatch below the PBR level in those areas. The actions were also combined to provide consistency in management measures and ease of interpretation for commercial fishermen. Further, NMFS believed that combining these measures would assist the Agency with establishing conservation management measures for all protected species under one action, regardless of which authority the species is managed under.

As a result of additional information received regarding changes in fishery effort and state fishery management regulations, the seasonally-adjusted closures for North Carolina and Virginia state waters were no longer deemed necessary to meet PBR requirements under the MMPA (Palka and Rossman 2005). Furthermore, the states of Virginia and North Carolina provided new

information on the status of their fisheries and state fishery management measures, which upon review and analysis resulted in the determination that the closures were also not necessary for sea turtle conservation.

Therefore, the final rule still contains two actions under both the MMPA and ESA regulatory authorities, respectively, and include: (1) management measures implementing a BDTRP for seven management units (MUs) within the western North Atlantic coastal bottlenose dolphin stock's geographic range; and (2) a revision to the large mesh gillnet size restriction in the mid-Atlantic large mesh gillnet rule. The two actions are analyzed under the Preferred Alternative of this EA.

The management measures under the MMPA are designed to have direct bycatch reduction of dolphins. The change in the large mesh size restriction under the ESA does not directly reduce the potential for incidental take of sea turtles; instead, it is intended to provide more consistency in federal and state regulations for large mesh gillnets along the mid-Atlantic and provide ease for commercial fishermen complying with various large mesh regulations in the mid-Atlantic. Specifically, revising the large mesh size restriction will align large mesh definitions amongst the existing Harbor Porpoise Take Reduction Plan, North Carolina Department Of Marine Fisheries regulations, and this final rule implementing the BDTRP. The basis for amending the large mesh gillnet size restriction under the ESA is to align current federal and state management measures rather than to reduce the potential for incidental takes of sea turtles. Additionally, changing the large mesh gillnet specifications to include greater than or equal to 7-inch (17.8 cm) stretched mesh, versus the previous greater than 8-inch (20.3 cm) stretched mesh, does not encompass any additional fisheries compared to the existing regulations. Therefore this Preferred Alternative is not expected to have any economic impacts or biological benefits. Furthermore, although this action is part of the Preferred Alternative, the majority of analyses in this EA are dedicated to analyzing the impacts associated with the BDTRP.

1.2.2 The BDTRP Under the Marine Mammal Protection Act

Section 118(f)(1) of the MMPA (16 U.S.C. 1387(f)(1)) requires the preparation and implementation of take reduction plans (TRPs) for strategic marine mammal stocks that interact with Category I or II fisheries. The MMPA defines a strategic stock as a marine mammal stock: (1) for which the level of direct human-caused mortality exceeds the PBR level; (2) which, based on the best available scientific information, is declining and is likely to be listed as a threatened species under the ESA within the foreseeable future; or (3) which is listed as a threatened or endangered species under the ESA, or as depleted under the MMPA (16 U.S.C. 1362(19)). PBR, as defined by the MMPA, means the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population (16 U.S.C. 1362(20)). NMFS regulations at 50 CFR 229.2 define a Category I fishery as a fishery that has frequent incidental mortality and serious injury of marine mammals; a Category II fishery as a fishery that has occasional incidental mortality and serious injury of marine mammals; and a Category III fishery as a fishery

that has a remote likelihood of, or no known, incidental mortality and serious injury of marine mammals.

The western North Atlantic coastal bottlenose dolphin is a strategic stock because fishery-related incidental mortality and serious injury exceeds the stock's PBR, and it is designated as depleted under the MMPA (see 50 CFR 216.15). Because it is a strategic stock that interacts with Category I and II fisheries, a TRP is required under the MMPA to reduce dolphin bycatch below PBR.

The short-term goal of a TRP is to reduce, within 6 months of its implementation, the incidental mortality or serious injury of marine mammals incidentally taken in the course of commercial fishing operations to levels less than the PBR established for that stock. The long-term goal of a TRP is to reduce, within 5 years of its implementation, the incidental mortality or serious injury of marine mammals incidentally taken in the course of commercial fishing operations to insignificant levels approaching a zero mortality and serious injury rate, taking into account the economics of the fishery, the availability of existing technology, and existing state or regional fishery management plans.

The MMPA requires that Take Reduction Teams (TRTs) be established to assist in the development and implementation of TRPs and reaching the short- and long-term goals of the MMPA. TRTs members shall have expertise regarding the conservation or biology of the marine mammal species for which the TRP will address, or the fishing practices that result in the incidental mortality and serious injury of such species. TRT members shall include representatives from federal agencies, relevant coastal states, regional fishery management councils, interstate fisheries commissions, academic and scientific organizations, environmental groups, all commercial and recreational fisheries groups and gear types incidentally taking the species or stock, and Native and tribal organizations. The MMPA requires that TRPs to reduce serious injury and mortality of strategic stocks be development within 6 months of the TRTs establishment, and the TRP be developed by consensus. These recommendations are submitted to NMFS for review and implementation.

Take Reduction Process

As mandated under Sections 118 of the MMPA, each TRP must include:

- A review of the information in the marine mammal stock's final stock assessment report published under Section 117(b) and any substantial new information;
- An estimate of the total number and, if possible, age and gender, of animals from the stock that are being incidentally lethally taken or seriously injured each year during the course of commercial fishing operations, by fishery;
- Recommended regulatory or non-regulatory measures for the reduction of incidental mortality and serious injury; and
- Recommended dates for achieving the specific objectives of the plan.

History of the BDTRP Process

In 1997, NMFS convened a Mid-Atlantic Take Reduction Team (MATRT) to reduce the incidental takes of harbor porpoise in ocean gillnet fisheries of the Mid-Atlantic. The MATRT originally considered developing a TRP for both harbor porpoise and coastal bottlenose dolphins. However, the MATRT determined that additional data were needed for bottlenose dolphins before take reduction measures could be developed for these stocks. Therefore, the MATRT only discussed management measures for the harbor porpoise until additional information for the bottlenose dolphin could be gathered. Although the MATRT did not reach consensus at their final meeting, they did reach agreement on several key elements including gear modifications and net caps for the monkfish and dogfish fisheries, short-term closures for the monkfish fishery, and research recommendations for bottlenose dolphins. The MATRT submitted their report to NMFS in August 1997.

NMFS established a team of stakeholders in 2001 after abundance estimates for the Western North Atlantic coastal bottlenose dolphins were available. The TRT was charged with developing a TRP to reduce serious injury and mortality of bottlenose dolphins to levels less than PBR. The Bottlenose Dolphin Take Reduction Team (BDTRT) consists of representatives from the fishing industry, state and federal resource management agencies, the scientific community, academia, and conservation organizations.

After six meetings, in May 2002, the BDTRT submitted a draft BDTRP, in the form of Consensus Recommendations, to NMFS with regulatory and non-regulatory consensus recommendations for seven management units within the range of the coastal bottlenose dolphin stock to reduce serious injury and mortality incidental to nine Category I and II commercial fisheries. However, new bottlenose dolphin abundance estimates became available to the BDTRT subsequent to the submission of these recommendations, and NMFS determined that the draft BDTRP would not meet the short-term goal of reducing serious injury and mortality to below PBR. Therefore, the BDTRT was reconvened in April 2003 to consider the new abundance estimates for the coastal bottlenose dolphin stock and resulting PBRs for each of the seven management units (Figure 1; Tables 1 and 2), and to refine their Consensus Recommendations to meet the short-term goal of the MMPA. In May 2003, the BDTRP submitted to NMFS the revisions and updates to the 2002 draft BDTRP.

The regulatory and non-regulatory management measures of the draft BDTRP affect nine Category I and II fisheries that were determined to interact with the coastal bottlenose dolphin stock. These fisheries operate in state and/or federal waters from New Jersey through Florida and include: (1) North Carolina Inshore Gillnet Fishery; (2) Southeast Atlantic Gillnet Fishery; (3) Southeastern U.S. Atlantic Shark Gillnet Fishery; (4) U.S. mid-Atlantic Coastal Gillnet Fishery; (5) Atlantic Blue Crab Pot/Trap Fishery; (6) mid-Atlantic Haul/Beach Seine Fishery; (7) North Carolina Long Haul Seine Fishery; (8) North Carolina Roe Mullet Stop Net Fishery; and (9) Virginia Pound Net Fishery.

In addition to the above Category I and II fisheries, the 2003 Atlantic Stock Assessment Report (SAR) (Waring et al. 2003) indicates that serious injury and mortality of bottlenose dolphins may

also occur incidental to the following Category III fisheries: (1) the Delaware Bay inshore gillnet fishery; (2) the Long Island Sound inshore gillnet fishery; (3) the Rhode Island, southern Massachusetts and New York Bight inshore gillnet fishery; (4) the southeastern U.S. Atlantic shrimp trawl fishery; and (5) the mid-Atlantic menhaden purse seine fishery. However, little or no information is currently available to accurately assess bottlenose dolphin serious injury and mortality in these fisheries. Therefore, these fisheries were not evaluated by the BDTRT nor are they included in their draft BDTRP.

NMFS also evaluated non-fishing activities that may impact bottlenose dolphin populations. These activities are outside the scope of the purpose and need for this action, except as they relate to cumulative impacts. These activities include:

- Irreversible modification of the water quality or habitat of the coastal bottlenose dolphin complex
- Recreational fishing
- Tourism, swim-with-dolphin programs
- Industrial activities

On July 22, 2002, NMFS published in the *Federal Register* a Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS) (67 FR 47772) for the development of a BDTRP. On September 19, 2002, the Agency published a notice reopening the comment period for an additional 45 days to ensure that the public had ample opportunity to provide comments (67 FR 59051).

After publication of the NOI to prepare an EIS, NMFS received additional stock abundance information on the status of the coastal bottlenose dolphin stock and determined that an EA, rather than an EIS, would be a more appropriate initial analysis under NEPA. The 2002 abundance estimates indicated an increase in stock abundance and an associated increase in PBRs for five of the stock's seven management units. In light of this new information, NMFS believed take reduction measures necessary to reach PBR were much less likely to significantly impact the economics of relevant fisheries. Thus, NMFS published in the *Federal Register* on July 31, 2003 (68 FR 44925), a notice to proceed with the preparation of an EA instead of an EIS.

NMFS received five sets of comments during the public scoping period. The comments were taken into consideration during the development of the proposed rule and its supplemental analyses. The comments are available as an appendix to the EA.

On November 10, 2004, NMFS published a proposed rule in the *Federal Register* (69 FR 65127) to implement the majority of the measures in the draft BDTRP. The proposed rule also included amendments to the mid-Atlantic large mesh gillnet rule (67 FR 71895) to extend the current seasonally-adjusted closures into North Carolina and Virginia state waters and revise the large mesh gillnet size restriction. NMFS announced that two public hearings would be scheduled.

The first public hearing was held on January 5, 2005, in New Bern, North Carolina, and the second was held in conjunction with a meeting of the BDTRT held on January 13-14, 2005, in Virginia Beach, Virginia. NMFS received 4,140 verbal and written comments on the proposed rule.

NMFS reviewed and analyzed public comments and revised the EA and final rule accordingly. As a result of public comments, the proposed beach gear operating requirements (beach seine, roe mullet stop net, and nearshore gillnet fisheries) and gear marking requirements were not included in the final rule. The final rule includes restrictions for small, medium, and large mesh gillnets in each of the seven management units, as well as non-regulatory measures. These changes are reflected in the Preferred Alternative (Alternative 7) in this EA. All comments are discussed in the comment response section in the final rule.

NMFS provided ample opportunities for public comment on the development of the proposed rule implementing the BDTRP, as well as its supporting analyses. These opportunities included: formal public scoping periods, open comment periods at the BDTRT meetings, a 90-day public comment period on the proposed rule and EA, two public hearings, an E-mail account to provide electronic public comments, and staff resources dedicated to ensuring open communication between NMFS and affected parties. NMFS contracted a commercial fisheries liaison who was instrumental in informing commercial fishermen affected by the BDTRP about the rule, pertinent meeting dates and locations, and discussion topics for upcoming meetings. The Fishery Liaison conducted dockside visits, disseminated updates on the BDTRP via commercial fishing expos, and held numerous meetings throughout Virginia and North Carolina to discuss the proposed rule. NMFS also generated and distributed a fact sheet about the BDTRT and upcoming BDTRT meetings and created a web site to inform the public about the BDTRP. NMFS continues to remain accessible to the public and to fishermen to address comments and concerns through the Fishery Liaison and NMFS personnel dedicated to ensuring that the implementation of the BDTRP is a success.

Once the final rule is published, implementation of regulatory and non-regulatory management measures will begin 30-days after the publication date. During this time, NMFS personnel and the Fishery Liaison will conduct workshops and dockside visits along the Atlantic coast to ensure affected commercial fishermen understand the management measures of the BDTRP and how to comply. NMFS will also develop compliance guides to distribute to affected fishermen, and post on a public website so fishermen and other interested parties can find all pertinent materials. NMFS will also work closely with federal, state, and local law enforcement agents, the Observer Program, and the Stranding Network to ensure the BDTRP is effective at meeting the short- and long-term goals of the MMPA.

1.2.3 Mid-Atlantic Large Mesh Gillnet Rule under the Endangered Species Act

The purpose of the ESA, as stated in Section 2 (b), is to provide a means whereby the ecosystems upon which endangered or threatened species depend may be conserved, to provide a program for

the conservation of such endangered or threatened species, and to take such steps as may be appropriate to achieve the treaties and conventions set forth of the Act. Section 2 (c) of the ESA states that it is the policy of Congress that all federal departments and agencies shall seek to conserve endangered or threatened species and shall utilize their authorities in furtherance of the purposes of the Act.

All sea turtles that occur in U.S. waters are listed as either endangered or threatened under the ESA. The Kemp's ridley (*Lepidochelys kempii*), leatherback (*Dermochelys coriacea*), and hawksbill (*Eretmochelys imbricata*) are listed as endangered. The loggerhead (*Caretta caretta*) and green (*Chelonia mydas*) turtles are listed as threatened, except for breeding populations of green turtles in Florida and on the Pacific Coast of Mexico, which are listed as endangered. The ESA and its implementing regulations prohibit the taking of sea turtles, even incidentally, except as identified in 50 CFR 223.206. The incidental take of endangered species may be authorized only by an incidental take statement or an incidental take permit issued pursuant to section 7 or 10 of the ESA, respectfully.

Sea turtle strandings along the coast of North Carolina dramatically increased during April and May of 1995, and this pattern has continued in subsequent years. Various temporary protections to reduce sea turtle interactions and mortality in large mesh gillnets were enacted by NMFS since 280 turtles stranded off North Carolina in 2000, coincident with the prosecution of the monkfish and dogfish fisheries (65 FR 31500, May 18, 2000; and 66 FR 28842, May 25, 2001). NMFS enacted an interim final rule effective from March 15 to November 10, 2002, which implemented a series of seasonally-adjusted closures to protect sea turtles in federal waters off North Carolina and Virginia waters when turtles were expected to occur in those areas (67 FR 13098, March 21, 2002). In the interim final rule, NMFS stated that it was considering adopting those restrictions as a final rule and received comments on that proposal through June 19, 2002. NMFS promulgated the interim final rule to prevent further mortalities and other takes of listed sea turtle species in large mesh gillnet fisheries, in particular, the federally-managed monkfish fishery. NMFS limited the interim final rule to federal waters primarily because, at the time, the monkfish fishery was not thought to operate in state waters, and secondarily, to avoid unintentionally affecting the black drum gillnet fishery that occurs in the nearshore waters of the eastern shore of Virginia. At the time, this fishery was involved in a cooperative agreement with NMFS to document sea turtle interactions.

On December 3, 2002, NMFS published a final rule (67 FR 71895) establishing seasonally-adjusted gear restrictions by closing portions of the mid-Atlantic EEZ to fishing with gillnets with a mesh size larger than 8-inch (20.3 cm) stretched mesh to protect migrating sea turtles. This final rule was unchanged from the interim final rule published March 21, 2002 (67 FR 13098). Comments on the interim final rule advocated that the restrictions be extended to North Carolina state waters to prevent gillnet fishermen from relocating effort and contributing substantially to the mortality of sea turtles in those waters. However, NMFS did not have sufficient evidence prior to publishing the final rule to predict that such a relocation of effort would occur. Following the implementation of the interim final rule, NMFS received comments

that several fishermen shifted monkfish gillnet effort from federal waters to North Carolina state waters. This preliminary information was received shortly before the final rule was enacted, and, therefore, NMFS was unable to further investigate and act upon the information prior to promulgating the final rule. Subsequent evaluation revealed that a shift in effort did in fact occur, leading NMFS to propose the amendments to the rule.

On November 10, 2004, NMFS published in the *Federal Register* a proposed rule (69 FR 65127), in conjunction with the proposed rule to implement the BDTRP, to amend the mid-Atlantic large mesh gillnet final rule to extend the seasonally-adjusted waters into North Carolina and Virginia state waters, with a conditional exemption for striped bass fishermen in North Carolina and Virginia. The amendments also included a revision to the large mesh gillnet size restriction to include large mesh gillnets with 7-inches (17.8 cm) or larger stretched mesh instead of the current greater than 8-inch (20.3 cm) stretched mesh requirement. Two public hearings were conducted at the same time as for the BDTRP. The Agency received 4,140 verbal and written comments.

NMFS reviewed and analyzed public comments and revised the EA and final rule accordingly. As a result of public comment and additional information received after the proposed rule published, the seasonally-adjusted closures for North Carolina and Virginia state waters were not included in the final rule. However, the final rule and EA still include the revision to the large mesh gillnet size restriction. These changes are reflected in the Preferred Alternative (Alternative 7) in this EA. All comments are discussed in the comment response section in the final rule.

2.0 SUMMARY OF MANAGEMENT ALTERNATIVES

This section summarizes the Alternatives were being considered in the final rulemaking and associated EA. Under each of these Alternatives, there are several universal non-regulatory recommendations detailed in Section 4.7.6 of this document, which are applicable to Alternatives 2 through 7. NMFS must determine the appropriate measures necessary to comply with the MMPA's goals, incorporating where appropriate, the recommendations in the draft BDTRP. NMFs must also assess all possible cumulative impacts to the environment of each Alternative.

The BDTRT discussed a variety of management measures that could serve as the basis for potential alternatives. The variables included, among others, area restrictions and gear practice/method restrictions, and proximity requirements. Using these measures, as well as comments received during the public comment period for the proposed rule, NMFS developed and analyzed seven Alternatives. The Alternatives chosen for analysis are within the scope of the purpose and need for this action and are technically feasible. NMFS determined that several additional alternatives did not merit additional analysis for the purposes of this EA because they either did not meet the requirements of the MMPA or would create an undue burden on the commercial fishing industry without significant conservation benefits.

The following is a brief summary of the Alternatives considered and analyzed in this EA. These Alternatives are discussed in more detail in Section 4.

- **Alternative 1 - No-Action Alternative**

The No-Action Alternative would maintain the current regulations associated with the nine Category I and II commercial fisheries interacting with coastal bottlenose dolphins. It would also maintain the current seasonally-adjusted closures and large mesh gillnet size restriction under the mid-Atlantic large mesh gillnet rule (67 FR 71895). The current regulations do not contain sufficient management measures to ensure bottlenose dolphin serious injury and mortality is reduced below PBR for all management units, as mandated by the MMPA. Therefore, NMFS is not implementing Alternative 1 because it would not meet MMPA requirements.

- **Alternative 2 - Proposed Rule**

This Alternative reflects the proposed rule published on November 10, 2004 (69 FR 65127), and would implement the majority of the BDTRT's regulatory Consensus Recommendations and all the non-regulatory recommendations. It would also amend the mid-Atlantic large mesh gillnet rule to extend seasonally-adjusted closures into North Carolina and Virginia state waters, with a striped bass conditional exemption, and revise the large mesh definition to include 7-inch (17.8 cm) or larger stretched mesh. Under this Alternative, gillnet, beach gear, and gear marking requirements would be implemented, as well as non-regulatory conservation measures, to reduce serious injury and mortality of coastal bottlenose dolphins below PBR in all management units within six months of implementation of the final rule. Alternative 2 would also reduce incidental takes of sea turtles from large mesh fishing by amending the mid-Atlantic large mesh gillnet rule under the ESA to extend the current seasonally-adjusted closures in North Carolina and Virginia state waters, seaward of the COLREGS lines. Additionally, the rule would revise the large mesh gillnet size restriction to include gillnets with a mesh size of 7 inches (17.8 cm) or greater stretched mesh to provide consistency amongst state and federal regulations and ease for commercial fishermen complying with these regulations.

NMFS is not implementing Alternative 2, even though it provides sufficient bycatch reduction of bottlenose dolphins and sea turtles, based on comments received during the public comment period indicating that this Alternative would: (1) inadvertently impact nearshore gillnet and other commercial fishermen that were not the intent of the BDTRT Consensus Recommendations; and (2) create redundant regulations for gear marking, as each state affected by the BDTRP has sufficient gear marking requirements to meet NMFS' purpose of proposing gear marking. Additional information received during and after the comment period also indicated that: (1) the proposed measures for beach gear are not currently necessary to reduce bottlenose dolphin serious injury and mortality to below PBR based on a review of the most recent bycatch estimates provided by Palka and Rossman (2005); and (2) the proposed seasonally-adjusted closures are no longer necessary because North Carolina Department of Marine Fisheries began developing state management measures for large mesh gillnet fisheries that will provide equal or

greater protection to sea turtles than the proposed Federally-imposed closures. Furthermore, the Virginia Marine Resources Commission enacted regulations to further manage large mesh gillnets in state waters and to eliminate monkfish gillnetting, the fishery of primary concern for incidental capture of sea turtles.

- **Alternative 3**

This Alternative would prohibit gillnet fishing within 3 km from shore in all management units and require gear marking for all affected commercial fisheries. NMFS is not implementing Alternative 3 because it does not sufficiently reduce bottlenose dolphin serious injury and mortality in the Summer Northern North Carolina Management Unit, and it would impose a significant economic burden on the human communities and fishing industries involved. This Alternative also does not consider the BDTRT's Consensus Recommendations for regulatory management measures. Furthermore, gear marking is not necessary as all states affected by the BDTRP currently maintain sufficient gear marking requirements.

- **Alternative 4**

This Alternative would allow gillnet fishing in state waters for no more than 12 consecutive hours, either night or day, for all management units. It would also require gear marking for all affected commercial fisheries. NMFS is not implementing Alternative 3 because it does not sufficiently reduce bottlenose dolphin serious injury and mortality in the Summer Northern North Carolina Management Unit, and it would impose a significant economic burden on the human communities and fishing industries involved. This Alternative also does not consider the BDTRT's Consensus Recommendations for regulatory management measures. Furthermore, gear marking is not necessary as all states affected by the BDTRP currently maintain sufficient gear marking requirements.

- **Alternative 5**

This Alternative would prohibit all gillnet fishing in state waters year-round in all management units and require gear marking for all affected commercial fishing operations. NMFS is not implementing this Alternative, even though it would provide the largest reduction of serious injury and mortality to bottlenose dolphins, because of the significant economic burden it would impose on the human communities and commercial fisheries involved. This Alternative also does not consider the BDTRT's Consensus Recommendations for regulatory management measures. Furthermore, gear marking is not necessary as all states affected by the BDTRP currently maintain sufficient gear marking requirements.

- **Alternative 6 - BDTRT's Draft BDTRP**

This Alternative would implement all of the BDTRT's Consensus Recommendations for both regulatory and non-regulatory management measures. Alternative 6 would require gillnet and beach gear requirements in the form of time/area restrictions, proximity requirements, a

requirement to haul small mesh gillnet gear once per 24 hours in certain management units, mandatory bycatch certification, and gear modifications. It would also include gear marking requirements for all affected commercial fisheries. NMFS is not implementing this Alternative, even though it would provide sufficient reduction of serious injury and mortality to bottlenose dolphins, because of the significant economic burden it would impose on the human communities and commercial fisheries involved. Specifically, NMFS believes the recommendation to implement a mandatory certification for all fishermen and gear marking for all gear types would impose an undue burden on the affected fishermen. Furthermore, gear marking is not necessary as all states affected by the BDTRP currently maintain sufficient gear marking requirements. NMFS also believes the recommendation to require fishermen to haul gear once every 24 hours in the small mesh gillnet fishery in the North Carolina Winter Mixed Management Unit and the Summer Northern North Carolina Management Unit would be difficult to enforce and result in limited benefit because 98 percent of small mesh gillnets currently soak for less than 24 hours.

- **Alternative 7 - Preferred Alternative**

The Preferred Alternative is representative of the final rule and will implement a modified Alternative 2 and 6. It will include regulatory measures for small, medium, and large mesh gillnets and non-regulatory conservation measures as proposed in the proposed rule (Alternative 2). The Preferred Alternative will also include an amendment to the mid-Atlantic large mesh gillnet rule to revise the large mesh gillnet size restriction to include large mesh gillnets with 7-inches (17.8 cm) or greater stretched mesh. This Alternative varies from Alternative 2 as it does not include operating requirements for beach gear (beach seine, roe mullet stop net, and nearshore gillnet), requirements for gear marking, and an extension of seasonally-adjusted closures into North Carolina and Virginia state waters. These management measures are not included in the Preferred Alternative based on comments received during the public comment period and additional information received during the review process. This Alternative is expected to reduce serious injury and mortality of bottlenose dolphins equivalent to that of Alternative 2, and therefore, meet requirements under the MMPA. It will also provide consistency amongst state and federal regulations and make it easier for commercial fishermen to comply with the regulations.

The Preferred Alternative varies from Alternative 6, in addition to the differences mentioned above for Alternative 2 in that it does not include gear marking for all affected commercial fisheries, a requirement to haul gear once per 24 hours in small mesh fisheries in the Summer and Winter North Carolina Management Units, and mandatory bycatch reduction training for all affected commercial fishermen. Discussions on the omission of these management measures were included in the proposed rule.

2.1 NON-REGULATORY RECOMMENDATIONS

Several non-regulatory options were recommended by the BDTRT and accompany each of the regulatory Alternatives considered in Section 4. NMFS considers these complementary to the

regulatory Alternatives and necessary components of a comprehensive BDTRP in order to achieve the short- and long-term goals of the MMPA, as outlined in section 118. The non-regulatory options include continued research and monitoring, enforcement of regulations, outreach to fishermen, improvements to the Marine Mammal Stranding Network, and a collaborative effort with states to remove derelict crab trap/pot gear.

The non-regulatory components are discussed below in terms of importance to the BDTRP and estimated costs. (see Appendix 5 for a tabular representation of estimated costs for each component and refer to section 4.7.6 for further discussion of these non-regulatory components.)

2.1.1 Research on Gear and Animal Behavior

The BDTRT discussions and recommendations guided NMFS in determining what types of gear research are most relevant to achieving the goals of the BDTRP, and relative priorities for gear research. Because most bottlenose dolphin takes appear to be in gillnets, and most gillnet fisheries operate from North Carolina northward, the majority of the BDTRT's gear research recommendations focused on gillnet gear. However, the BDTRT recommended that research be conducted whenever possible to investigate the utility of gear modifications so fishermen are not required to make unnecessary changes. NMFS concurs with the BDTRT's recommendation and will consult with the BDTRT about any proposed gear modifications potentially affecting the take of bottlenose dolphins.

NMFS will continue to fund and support cooperative research with the commercial fishing industry, scientists, Sea Grant, state agencies, academia, and other interested parties to investigate innovative methods of reducing dolphin bycatch while allowing fishermen to maintain catch effort. NMFS plans to report research findings to the BDTRT at future meetings and to the public through outreach channels. Because animal behavior plays a large role in entanglement events, research on animal behavior is also important.

The following gear research is in progress or under consideration:

1. Twine Stiffness. The BDTRT believes that increasing the stiffness of the twine may result in fewer takes of dolphins in gillnets. The best way to maintain twine stiffness is to increase twine size. NOAA funded a study that is currently being conducted in New Jersey to determine if increasing twine stiffness will allow for continued catch effort of finfish in the mid-Atlantic region, and the degree of difficulty that is required to remove gilled fish from less flexible experimental mesh. If increasing twine stiffness proves effective at maintaining catch effort of finfish and removing fish from the twine, this approach will then be field-tested to determine its conservation benefits to bottlenose dolphins and other protected species. The cost of this study was \$8,000 to purchase nets and test/compare the nets. NMFS will continue to receive updates on the progress and future next steps of the study and update the BDTRT at future meetings. NMFS also partnered with North Carolina Sea Grant in 2004 to solicit funding a study that will test gillnets with three different twine sizes with and without bridles. (see number 4 for further details)

2. Proximity to nets. The BDTRT recommended that vessels remain within a certain distance of their nets under some circumstances to ensure tending as a means of reducing the amount of gear in the water and soak times. A initial evaluation was conducted in Virginia to determine how many nets could be fished while remaining within 0.5 nautical mile (0.93 km) of all nets. The evaluation did not provide information that would cause NMFS to alter requirements for commercial fishermen to remain within a certain distance of their nets in some locations and seasons. There are currently no plans to pursue additional studies. This study was conducted at no cost to the government.

3. Lowering Float Lines. The Florida shark driftnet fishery uses floating gillnets. Research in the Pacific swordfish driftnet fishery found that marine mammal interactions could be reduced by lowering the float line below the surface. The BDTRT recommended testing lowering the float line and reducing the depth of the net in the Florida shark driftnet fishery. The estimated cost of this project is \$50,000-100,000 (2-1,000 yd nets plus monitoring personnel and equipment). There are currently only 6 commercial fishermen participating in this commercial fishery, and levels of bottlenose dolphin serious injury and mortality in this fishery are relatively low. NMFS, therefore, is not currently pursuing funding gear research for this fishery because the anticipated cost of this project is high relative to the expected conservation benefit.

4. Bridle Alterations. The BDTRT believed that slack webbing could pose additional risk to dolphins. They recommended that NMFS investigate bridle alterations to prevent collapsing of the net and elimination of bridles on anchored gillnet gear. NOAA produced underwater video of gillnets deployed with different bridle and panel configurations. The video demonstrated that when strain is placed on a bridle of any configuration the net collapses and slack webbing is produced. The probability of witnessing a dolphin take is low, thus it would be difficult to accurately determine if nets would interact with dolphins less or more if bridles are present or absent. However, NMFS can evaluate total catch of finfish with or without use of bridles. The Agency anticipates incorporating this variable into the study of net depth.

The BDTRT specifically recommended that NMFS investigate bridle alterations for use within North Carolina state and federal waters. Evidence provided by the BDTRT suggested that fishermen do not use a bridle, but instead use a modified bridle to attach the gear to the anchor. This is reportedly done so that there is not enough pressure applied to the float line to collapse the end of the net.

NMFS partnered with North Carolina Sea Grant in 2004 to solicit funding for a gear research project investigating the effect of bridle elimination on the structural integrity and target catch efficiency of coastal anchored gillnets. The objectives of the study are specifically to evaluate the effects of gillnet bridle elimination and twine thickness on target catch efficiency associated with the Spanish mackerel and spot fisheries; and to evaluate the effects of bridle elimination on the structural integrity of the gillnet. Three modified gillnets with three different twine sizes will be used and rigged with a bridle at either end. Three control gillnets of the same twine sizes will be used without bridles for comparison. Two experimental gillnets will also be examined that increase flotation to determine if increased buoyancy is required to prevent gillnet collapse in the

absence of bridles. The project will commence in the summer of 2005 and be completed at the end of summer 2006 and is estimated to cost \$75,000. Results of the study will be provided to the BDTRT at future meetings.

5. Net Panels-Lacing. When net panels are not laced together where nets are joined, slack webbing is produced. The BDTRT recommended that NMFS investigate the behavior of anchored gillnet gear with regard to likelihood of entanglement (a) when net panels are laced together and (b) when they are not laced together, leaving gaps between nets. NMFS is partnering with North Carolina Sea Grant to request proposals for conducting this project. Costs of this study have yet to be determined.

6. Inverted Bait wells in Crab Traps/Pots. Georgia crab fishermen have developed inverted bait wells (where the well opens inside the pot/trap) to prevent dolphins from "tipping" the traps/pots and stealing the bait. NMFS will provide this information in outreach/education materials for use in problem areas. The BDTRT recommended that NMFS investigate the effectiveness of inverted bait wells in crab traps/pots to prevent bottlenose dolphins from removing bait from pots/traps and from being caught in trap lines.

NMFS provided funds in 2004 to the Georgia Department of Natural Resources to work cooperatively with a local crab trap/pot commercial fishermen to investigate the use of inverted crab trap/pots. There are two objectives to the project: (1) To quantify bottlenose dolphin interactions with blue crab traps/pots built with inverted, recessed, and bottom-opening bait wells; and (2) To develop and maintain a database of bottlenose dolphin interactions with all three types of blue crab traps/pots. The project will be completed at the end of summer 2005. The cost of this study was \$10,000. Results of the study will be provided to the BDTRT at future meetings.

7. Pound Net Lead lines. The BDTRT recommended that NMFS investigate the effects of reducing slack in the webbing of pound nets to reduce the potential of interactions with dolphins. Further restrictions on the Virginia pound net fishery may be necessary because of its frequent interactions with sea turtles. Research is ongoing to examine impacts on sea turtles. However, NMFS is partnering with North Carolina Sea Grant to solicit proposals to also examine the impacts of the pound net fishery on dolphins. The cost of this study has yet to be determined.

8. String Design/Net Profile. When a deeply constructed net is set in shallow water, slack webbing is produced. The BDTRT recommended that NMFS investigate the effects of different string designs (i.e., shallower net depth, hung in different parts of the water column) to determine if the amount of webbing can be reduced without affecting catch for different fisheries (especially small mesh in coastal waters). In the range of the Summer Southern North Carolina Management Unit, the recorded dolphin take in the kingfish fishery in February 2000 in untraditional gear at a depth of 70 meshes deep. A typical net depth is only 25 to 35 meshes deep. As a result, the BDTRT recommended research in gear modifications to reduce the depth of webbing. Reducing the depth of the webbing in gillnets set in shallow water has two potential benefits: (1) it reduces slack webbing; and (2) lower floats down in the water column where they

are easier for the animals to detect. NOAA intends to fund a study to test the catch rates of different gillnet depths in fisheries for weakfish, croakers, and kingfish (sea mullet). NMFS is partnering with North Carolina Sea Grant to solicit proposals for conducting this project. The estimated cost of this study is \$10,000.

9. Dolphin Behavior Around Nets. The BDTRT recommended that NMFS investigate dolphin interactions with gillnets and associated behaviors. NMFS is currently conducting a study in Holden Beach, North Carolina, with the following objectives:

- Assess the frequency and nature of dolphin interactions with gillnets to evaluate the extent to which dolphins are attracted to nets;
- Determine whether all or only a subset of a local dolphin population repeatedly interacts with gillnets. If only a subset is involved, the project will determine (a) whether adults or juveniles preferentially interact with gillnets, and (b) whether the same individuals repeatedly interact with gillnets; and
- Assess the implications of the results of Objectives 1 and 2 to reducing dolphin bycatch in coastal gillnets in North Carolina and elsewhere along the U.S. Atlantic coast. Biopsy samples are being collected to identify which dolphin stock(s) are interacting with the nets.

The study is currently ongoing and expected to be completed at the end of 2005. The cost of this study is approximately \$57,000. NMFS will provide updates to the BDTRT at future meetings.

10. Flotation Research. The BDTRT recommended that NMFS investigate flotation modifications for use within North Carolina state and federal waters. For instance, flotation used within some (yet to be determined) distance of the ends of the net should have increased buoyancy relative to the floats used in the rest of the float line. NMFS partnered with North Carolina Sea Grant to solicit funding for a gear research project to examine the use of bridles with various twine sizes. This study will also examine two experiment gillnets with increased flotation to determine if increased buoyancy is required to prevent gillnet collapse in the absence of bridles. The project will commence in the summer of 2005 and will be completed at the end of summer 2006. Costs associated with this study are included under number 4. Results will be provided to the BDTRT at future meetings.

11. Acoustic Reflective Webbing. Early BDTRT discussions focused on research to test the fishability of gillnet made from nylon twine containing barium sulphate. The webbing reportedly reflected sound waves much better than conventional monofilament and would, therefore, more likely be detected by dolphins. NMFS contracted to purchase the modified webbing to be used in a study involving two experiments: (1) testing the fishability of the webbing in New Jersey (\$50,000); and (2) studying the dolphin's ability to detect the webbing using captive animals in Hawaii (\$25,000 for a study of dolphins' ability to detect different net types/configurations,).

NMFS funded the latter study, which investigated the effectiveness of using an alternative net webbing made with barium sulphate and tested a captive dolphin's ability to detect the webbing using different net types/configuration. The study was published in *Aquatic Mammals* in 2004 (Mooney et al. 2004). The results of the study indicated that the experimental barium sulphate

net was more acoustically reflective than nylon nets at angles greater than normal incidence of approach by the dolphin to the net, but less than 40 degrees. However, the barium sulphate nets were difficult to detect from background noise at angles greater than 40 degrees. The study concluded that dolphins may be able to detect the experimental nets at a greater distance than nylon nets. Although the study results were promising, NMFS is not currently pursuing a requirement for fishermen to use barium sulphate nets or funding additional studies using barium sulphate webbing because the material to construct the nets is difficult to acquire and may not be practical for commercial fisheries. The approximate cost to acquire the webbing and conduct this study was \$75,000.

12. Time of Day. The BDTRT recommended that NMFS investigate the effect of time of day and length of time from set with respect to when dolphins are caught in gear, based on carcass temperature and soak times. The Observer Program has collected body core temperatures since May 1994. However, limitations currently exist on data tables needed to correlate body temperature, water temperature, and time of death. NMFS will continue to collect core temperatures until such data tables become available to determine if any correlations exist between time of day, set time, and incidental take. This study is being conducted at no additional cost to the government.

13. Stop Net Bycatch. The BDTRT recommended that NMFS regulate the stop net fishery to restrict the first 300 feet (100 yds) of their stop net to 4-inches stretched mesh. NMFS proposed this restriction in the proposed rule published on November 10, 2004. Following the public comment period, NMFS received numerous public comments and concerns regarding a potential increase in bycatch in finfish and other aquatic animals if the nets were decreased from the current 8-inch stretched mesh to the proposed 4-inches in the first 300 ft of the stop net. Therefore, NMFS funded a study to investigate and compare bycatch between the current 8-inch stretched mesh stop net and the proposed 4-inch stretched mesh stop net. The study will also determine if the proposed 4-inch stretched mesh net decreases bottlenose dolphin interactions. The study is being conducted during the 2005 Stop Net fishing season. The cost for this study is approximately \$45,000.

The total cost for all the above-described research is \$280,000, which does not account for those projects in which costs have yet to be determined. To account for some of these projected costs, NMFS added 40% to the \$280,000, or \$112,000. The estimated cost of implementing these recommendations is \$329,000. NMFS anticipates completed these research projects in three years. Therefore, the estimated cost was divided into an annual research cost of \$392,000 . (see Appendix 5, Table 1)

2.1.2 Public Education

The BDTRT recommended that NMFS provide training to educate fishermen about applicable laws and regulations regarding marine mammals; contact information and protocols for responding to an entangled or stranded marine mammal; and information regarding best fishing

practices (e.g., practices that reduce dolphin attraction to fish bycatch and provide fishery and public education). Public education and outreach is an important component of implementation of the BDTRP because it ensures that the affected fishermen understand the laws behind the regulations and how their compliance benefits coastal bottlenose dolphins.

The BDTRT also recommended that NMFS develop and distribute informational materials, including: brochures, placards, decals, electronic presentations, videos, and public service announcements to help in this outreach endeavor.

The BDTRT also recommended that NMFS and cooperating parties distribute outreach materials via newspapers, commercial and recreational industry magazines, trade shows, marinas, fish houses, web sites, mailings with fishing licenses, and brochures at fishing supply stores. The BDTRT specifically suggest the materials include information on the following:

- The nature of dolphin-fishery interactions in specific fisheries;
- Marine Mammal Protection Act;
- Protected species information;
- Best fishing practices; and
- Ghost gear and derelict gear collection and disposal.

NMFS plans on using the following various means of disseminating this information:

- Voluntary workshops;
- Dockside visits/forums;
- Mail-outs; and
- BDTRP website.

Other means of disseminating information recommended by the BDTRT, will be pursued as resources allow.

2.1.2.1 Voluntary Workshops

NMFS intends to schedule approximately 13 voluntary workshops at major ports from New Jersey through Florida. The Fishery Liaison and outreach staff will set up the meetings, develop the curricula, and lead the workshops.

- Workshops: 13 x 1 FTE x \$1,000= \$13,000
- Facilities: No cost. NMFS will seek free facilities.

Subtotal: \$13,000

2.1.2.2 Dockside Visits/Fishermen Fora

NMFS' Fishery Liaisons will exchange BDTRP-related information through opportunistic dockside visits and attendance at fishermen fora.

- Fishery Liaison Travel (Northeast Region): 7 ports, 4 fora x \$1,000 per event = \$11,000
- Fishery Liaison Travel (Southeast Region): 6 ports, 4 fora x \$1,000 per event = \$10,000

Subtotal: \$21,000

2.1.2.3 Website Development

A website will be established to provide pertinent information to fishermen in lieu of dockside visits or workshops. The website development will likely require a contract for its design, development, and maintenance.

- Website development and maintenance: \$2,000

Subtotal: \$2,000

2.1.2.4 Mail-outs

NMFS will provide written educational materials (i.e., brochures, placards, decals (with the contact number of response personnel for interactions), videos, and public service announcements) to all Category I and II fisheries affected by the BDTRP. NMFS currently provides an annual mail-out to fishermen reminding them of their requirements under the various take reduction plans.

- Brochure Development, Graphic Design, Printing of 50,000 brochures @ \$0.35/each = \$17,500
- Decal Development, Graphic Design, Printing for 15,000 decals @ \$0.33/each = \$4,950
- Laminated Placard Development, Graphic Design, Printing for 15,000 placards @ \$2 each = \$30,000
- 10-15 Minute Video Development = \$15,000
- Video Duplication @ \$2/each x 1,000 = \$2,000
- Distribution: regular postage (\$0.37)*15,000 brochures and decals = \$5,550; plus 1,000 (video)*\$1.00 (for additional shipment costs of videos) = \$1,000
Total distribution = \$6,550

Subtotal: \$76,000

The estimated total cost for public education via the above-described methods to implement the BDTRP is \$112,000. Please see Appendix 5, Table 2.

2.1.3 Improved Quality of Stranding and Observer Data

In May 2002, the BDTRT submitted to NMFS recommendations that will improve and streamline the Stranding Network and its operating procedures.

The BDTRT values the Stranding Network and the information that it collects. Through the Stranding Network and its volunteers, the BDTRT received confirmation that takes are occurring and, in some cases, attributable to specific fisheries. The evidence collected by Stranding Network members proved to be very important, even if limited, in providing evidence of interactions. In fact, it was the data from frequent strandings of marine mammals, with signs of fishery interactions in the action area, that led to the establishment of an Observer Program in

these fisheries. Therefore, the role of the Stranding Network in supplementing implementation and monitoring efforts should be explored and expanded.

The BDTRT's recommendations include ensuring adequate geographic coverage, improving network members' training and resultant data accuracy, increasing reporting frequency and response time, facilitating communication among the Stranding Network and Observer Program, ensuring a centralized repository, involving fishermen in identifying gear found on stranded animals, and providing guidance to enforcement agents about their role in stranding response. NMFS will implement a suite of measures to address the BDTRT's recommendations.

Responders' Training/Resources:

The BDTRT recommended that NMFS provide adequate levels of training and support (e.g., equipment, information on determining Human Interactions (HI) as cause of death) and the funding to conduct a workshop. NMFS intends to continue hosting biennial workshops for the Stranding Network and more local training fora, such as the workshops held in Florida during fiscal year 2003. The workshops will help improve the quality of the HI determinations by Network members through ensuring that data collection protocols are reviewed with hands-on training.

- Biennial Workshop: \$20,000
- Transportation of 4 carcasses to meeting/storage: \$2,000

Subtotal: \$22,000

The BDTRT also wanted NMFS to compile the workshop results in a format that may be used to train those who did not attend the workshop. NMFS intends to implement this recommendation by developing supplements to existing information that are specific to the mid-Atlantic (e.g., gear types that may be found, seasonality of fisheries, etc.). NMFS plans to generate approximately 200 copies to distribute to the Atlantic and Gulf of Mexico Stranding Network participants. NMFS will also maintain a guidance library of Stranding Network Training Materials at its Southeast Fisheries Science Center (SEFSC). For those Network participants who could not attend the training workshop, NMFS will post workshop materials on a NMFS website.

- Development and printing of mid-Atlantic specific stranding information

Subtotal: \$5,000, plus cost of SEC workshops

Geographic Coverage:

The BDTRT recommended that NMFS improve the observation of, reporting of, and response to strandings in waters landward of the COLREGS lines. NMFS intends to implement this recommendation by developing and distributing brochures and decals describing the Stranding Network, how to report strandings, what to do when a stranded or injured animal is found, and important contact number(s). These outreach materials will be distributed to the public, aquaria, scientists, wildlife enforcement agents, wildlife tour operators, and natural resource managers.

- Development, Graphic Design, Printing @ 100,000 brochures (approximately 12,500 per state) @ \$0.35/brochure x 100,000 brochures = \$35,000 (update with decided brochure cost)
- Development, Graphic Design, Printing @ \$0.33 for 5,000 decals = \$1,650

- Distribution: approximate mailing cost 10,000 brochures in bulk = \$4,000
Subtotal: \$40,650 (update with brochure cost)

Reporting/Response:

Another recommendation regarding the Stranding Network included supplying information to fishermen about the protocols and contact information for stranding responses. The agency intends to include this information in fisheries outreach materials described above.

Toll-free lines for Reporting of Stranding:

In order to improve the timely reporting and response to strandings, the BDTRT recommended NMFS provide funding for a toll-free, centralized hotline. All relevant Atlantic state wildlife agencies currently have such hotlines. These numbers will be provided with the appropriate outreach materials.

Communication:

Enhancing communication among stranding network members, observer programs, researchers, and fishermen was another recommendation of the BDTRT. The BDTRT wanted to ensure more thorough and reliable collection of data, comparisons of observations, feedback to fishermen, and full use of available expertise and resources. The group recommended including fishermen in stranding assessments and gear examination where there is evidence of entanglement. NMFS concurs with the value of the recommendations and plans to explore ways to enhance communication and standardize protocols among stranding network members, observer programs, researchers, wildlife enforcement agents, and fishermen. The agency also plans to convene a gear discussion group to provide on-call expertise in determining fisheries associated with fishery interaction strandings. The group may also meet periodically as needed.

- 1 Annual Meeting= \$5,000 (for meeting logistics and invitational travel)
Subtotal: \$5,000

Educating Enforcement Agents:

Enforcement Agents are key players in the implementation and monitoring of the BDTRP and could greatly enhance the Stranding Network. The BDTRT emphasized the need to educate enforcement agents about the regulatory measures of the BDTRP, as well their role in the stranding network. The BDTRT asked NMFS to provide funding to organize and conduct formal workshops for state and local marine patrols and other coastal enforcement entities about their role in the stranding network. The BDTRT also advised NMFS to formally request that marine patrols monitor inside waters for any evidence of fishery-related incidental mortality or serious injury and that they assist with strandings. In response to these recommendations, Stranding Network members and NMFS Stranding Program staff will set up meetings to provide information to federal, state, and local marine patrols about stranding issues or travel to already scheduled training sessions.

- Travel: 1 FTE @ 3 days to 13 states: \$13,000
Subtotal: \$13,000

Gear Repository:

The BDTRT asked NMFS to establish a centralized gear repository for gear removed from strandings and to catalogue the gear for future reference. The NMFS' Southeast Regional Office currently maintains its central repository in Pascagoula, Mississippi, and its Northeast Regional Office currently maintains its central repository in Narragansett, Rhode Island. Per BDTRT recommendations, NMFS will refine the standard operating procedures associated with obtaining gear from network volunteers, cataloguing the gear, interfacing with enforcement, and gear retention time and will ensure that the guidance is distributed to Stranding Network members.
Total: no additional cost

Observer Training:

The BDTRT also recommended that NMFS improve observer training and provide observers with adequate equipment. The training is currently three weeks long (increased from a two week program earlier), and observers are trained in all aspects of their job functions and all equipment that is needed to perform that job. An incentive program was initiated, which gives observers additional pay for high quality data after their data sheets are evaluated by the data editors who deduct "points" for errors and missing data. The program is currently being evaluated.
Total: No additional cost

The total cost for improving the quality of stranding and observer data is approximately \$85,650. Please see Appendix 5, Table 3.

2.1.4 Observer Coverage

With respect to enhancing the bycatch estimate, the BDTRT recommended that NMFS:

1. Develop effective monitoring strategies for all fisheries and gear types in order to reliably determine their level of interaction with coastal bottlenose dolphins.
2. Develop and implement reasonable monitoring standards, such as the level of observer coverage needed, to address interaction issues with an acceptable level of probability.
3. Increase monitoring coverage where existing levels may not meet minimal standards.
4. Disperse monitoring effort temporally and geographically to ensure that monitoring requirements of the MMPA are addressed for all management units.
5. Provide more robust assessment of the specific or direct factors contributing to dolphin mortality and serious injury.
6. Provide better assessment of fishery effort.
7. Explore and expand stranding networks for collection of data pertinent to bottlenose dolphin/fishery interactions. Include training, equipment, support, and better communication among participants (stranding network members, managers, local authorities, scientists, and fishers).
8. Consider alternative monitoring methods, specifically, additional use of alternative observation platforms.

The NMFS Northeast Fisheries Science Center (NEFSC), which conducts observer programs for gillnet fisheries throughout the mid-Atlantic, including North Carolina, began developing a strategy to monitor all fisheries and gear types to reliably determine the level of interaction of a

variety of cetaceans with an acceptable level of certainty. However, due to limited funds in FY 2003, the NEFSC shifted the focus instead to continue and expand monitoring of currently observed fisheries. A study was conducted that investigated the appropriate methodology to disperse observer coverage both temporally and geographically with respect to cetaceans and turtles in the mid-Atlantic gillnet fisheries. The high priority species that interact with mid-Atlantic gillnets are coastal bottlenose dolphins, harbor porpoises, right whales, and sea turtles. This study specifically investigated the effects on the Coefficient of Variance (CV) of the bycatch estimate under three different monitoring schemes: (1) proportional to last year's effort, (2) optimal for a low CV of bycatch for each high priority species considered independently, and (3) optimal for a low CV of all the high priority species put together. These potential monitoring schemes result in slightly different observer coverage patterns. Nonetheless, preliminary results indicated observer coverage in North Carolina, particularly in the winter, should be higher than current levels. Therefore, during FY 2003, most of the observer coverage (43 percent) was allocated to the state of North Carolina.

NMFS is hiring a contracted field technician to gather pertinent information (contact information, vessel size, gear type, target species, etc) from commercial, nearshore gillnet fishermen in North Carolina and Virginia to help build a database of information upon which to build more representative coverage in the mid-Atlantic. The database will help establish where fishermen are launching their vessels, the areas they are fishing, and what size vessels they are using because most commercial fishermen in the mid-Atlantic seem to use small vessels (<24 ft) that are too small to safely accommodate observers. Alternative vessel-based platform can then be developed for use to observe these fishery operations without having to deploy observers directly on fishing vessels. The NEFSC Sea Sampling Program has already used alternative platforms to monitor pound nets for sea turtle/fishery interactions for the past several years. Therefore, the field technician will work closely with the NEFSC in developing and implementing an alternative platform program for the mid-Atlantic nearshore gillnet fisheries. The cost for this contracted technician is approximately \$200,000 per year.

The Atlantic Coastal Cooperative Statistics Program (ACCSP) is also currently creating a new database that contains all current state and federal information on fishing effort. The availability of this information may lead to a better assessment of fishery bycatch estimates through use of a different unit of effort than landings. Logbooks, which provide detailed fishery effort data, are required by some fisheries. However, not all fisheries require these logbooks and the level of compliance with logbook requirements varies from state to state and fishery to fishery.

The estimated cost for the observer program to sample the fisheries with a 30 percent precision rate, which equates to 1,300 hours of sea days, is \$1,500,000. Analysis is crucial to decipher the observer data and determine bycatch rates of the coastal bottlenose dolphins and is estimated to cost \$219,700 per year. The total estimated cost for observer coverage and analyses of data collected is approximately \$1,719,700, plus an approximate \$200,000 to fund the field technician. The total approximate cost to obtain a representative level of observer coverage is \$1,919,700. See appendix 5, Table 4.

3.0 DESCRIPTION OF THE AFFECTED ENVIRONMENT

There are three broad categories of information that NMFS uses in its evaluations of impacts: physical, biological, and community information. Physical information includes geographic, oceanographic and climatic factors. Biological information includes status and distribution of marine species, prey species, and life history information. Impact assessments look at the basic profile of the affected community and then provide additional investigations into the likely impacts of specific regulations on each community, given its unique characteristics.

3.1 PHYSICAL ENVIRONMENT

The physical area affected by this action includes portions of U.S. coastal waters from New Jersey through Florida, since this is the range of the western North Atlantic coastal bottlenose dolphin stock (2002 SAR Waring et al. 2002).

Along the U.S. Atlantic coast, climatic, physiographic, and hydrographic differences separate the area latitudinally at Cape Hatteras- dividing the regions into a mid-Atlantic area and a South Atlantic area. Both the mid-Atlantic and the South Atlantic areas are affected by this action.

The mid-Atlantic area is relatively uniform physically and is influenced by large estuarine areas including Chesapeake Bay; Delaware Bay; and the almost continuous band of estuaries behind the barrier beaches from New York to Virginia. The southern portion of the mid-atlantic includes the estuarine complex of Currituck, Albermarle, and Pamlico Sounds, a 2500 square mile system of large interconnecting sounds landward the Outer Banks of North Carolina.

The South Atlantic area provides marine organisms a diversity of structural habitats including: estuarine, coral and live/hard bottom, artificial reefs, and sargassum (SAFMC 1998). North Carolina and Florida have extensive barrier islands with limited numbers of inlets to allow for flushing between the large sound systems and the open ocean, whereas South Carolina and Georgia contain short barrier islands with more inlets to increase flushing (SAFMC 1998). In the South Atlantic area, the bottlenose dolphin stock is associated with coastal beaches, intercoastal areas, bays, and estuarine habitats.

NMFS conducts research on the habitat associated with the bottlenose dolphin stock as detailed in the 2002 Stock Assessment Report (Waring et al. 2002). South of Cape Hatteras, North Carolina, the bottlenose dolphin stock is influenced by the Gulf Stream current. The Gulf Stream current is a warm current that originates in the Caribbean and flows along the eastern coastline. Off North Carolina, the current extends further offshore and continues north until it merges with the Labrador current. As with most marine mammals, the distribution and abundance of the bottlenose dolphin stock is greatly influenced by seasons and temperatures, as dolphins prefer more mild water conditions. The location of the Gulf Stream in relation to the coastal line is influenced by time of year or season, which then affects the distribution and abundance of the bottlenose dolphin stock.

The physical environment of the area encompassed by the sea turtle conservation rule (the large-mesh gillnet rule revision) includes the coastal waters off North Carolina and Virginia from the COLREGS lines to the EEZ. These areas are known to be utilized by sea turtles throughout much of the year, with numbers increasing as water temperatures get warmer.

3.2 BIOLOGICAL ENVIRONMENT

Marine waters from Florida through New Jersey provide habitat to a diversity of aquatic organisms, including protected species.

3.2.1 Habitat (Including Essential Fish Habitat (EFH))

Coastal bottlenose dolphins utilize inshore and offshore waters out to 15 nautical miles (nmi) from the coast of the eastern United States. Because sea turtles are highly migratory species, they can be found in nearshore as well as offshore waters. The area affected by the Preferred Alternative is identified as Essential Fish Habitat (EFH) by the following Fishery Management Plans (FMPs): Panaeid and Rock Shrimp, Red Drum, Snapper Grouper, Golden Crab, and the Coral, Coral Reefs, and Live/Hard Bottom Habitats in the South Atlantic Region (as identified by the South Atlantic Council); Coastal Migratory Pelagics and Spiny Lobster (joint FMPs of the Gulf and South Atlantic Councils); and the Tuna/Swordfish/Shark and Billfish (as identified in the Highly Migratory Species FMP). The final regulations to implement the BDTRP and amendments to the mid-Atlantic large mesh gillnet rule are not expected to adversely affect any habitat for bottlenose dolphins and sea turtles or EFH, since the fisheries and gears that interact with bottlenose dolphins and sea turtles impacted by the Preferred Alternative have not been previously shown to have any effects on EFH.

3.2.2 Marine Mammals

The information on marine mammals below comes from the U.S. Atlantic and Gulf of Mexico Marine Mammal Stock Assessments, 2002 (Waring et al. 2002). More detailed information can be obtained from this document, and it is hereby incorporated by reference. Stock assessment reports (SARs) can be obtained from NMFS or found online at:
http://www.nmfs.noaa.gov/prot_res/PR2/Stock_Assessment_Program/sars.html

3.2.2.1 Western North Atlantic Coastal Bottlenose Dolphins (*Tursiops truncatus*)

3.2.2.1.1 Population Status

In 1993, NMFS designated the coastal migratory stock of bottlenose dolphins as depleted based on the best scientific evidence available at the time. Scott et al. (1988) estimated that as much as 50 percent or more of the coastal migratory stock of bottlenose dolphins was lost in a 1987-88 mortality event along the eastern coast of the United States from New Jersey to Florida. In 1993, NMFS determined that if the stock was at carrying capacity (K) prior to the 1987-1988 mortality event and then declined by 50 percent, it would have been below its maximum net productivity (MNP) level, and accordingly met the criterion for the depleted listing under the MMPA. An

optimum sustainable population (OSP) is a population size that ranges from the MNP level to K. The MNP level for cetaceans is assumed to be 4 percent, which is based on theoretical calculations that show dolphin populations cannot grow at rates much greater than 4 percent with the constraints of their reproductive life history (Waring et al. 2002; Barlow et al. 1995).

This stock is considered a strategic stock both because the estimated commercial fishery serious injury and mortality data are greater than PBR, and this is depleted (Waring et al. 2002).

3.2.2.1.2 Stock Distribution and Designation of Management Units

The western North Atlantic coastal bottlenose dolphin stock is designated as an individual stock in NMFS' Stock Assessment Reports. Recent research, however, demonstrated that the stock was more structurally complex than originally believed (Waring et al. 2002). To reflect this complexity and for management purposes, this stock was separated into seven discrete management units (MUs), which have distinct spatial and temporal components (see Figure 1). A separate PBR for the stock was determined for each MU. Therefore, management measures were established per MU. The use of MU is appropriate for management purposes because fisheries interacting with this stock also have similarly-identified spatial and temporal components. The separate MUs include:

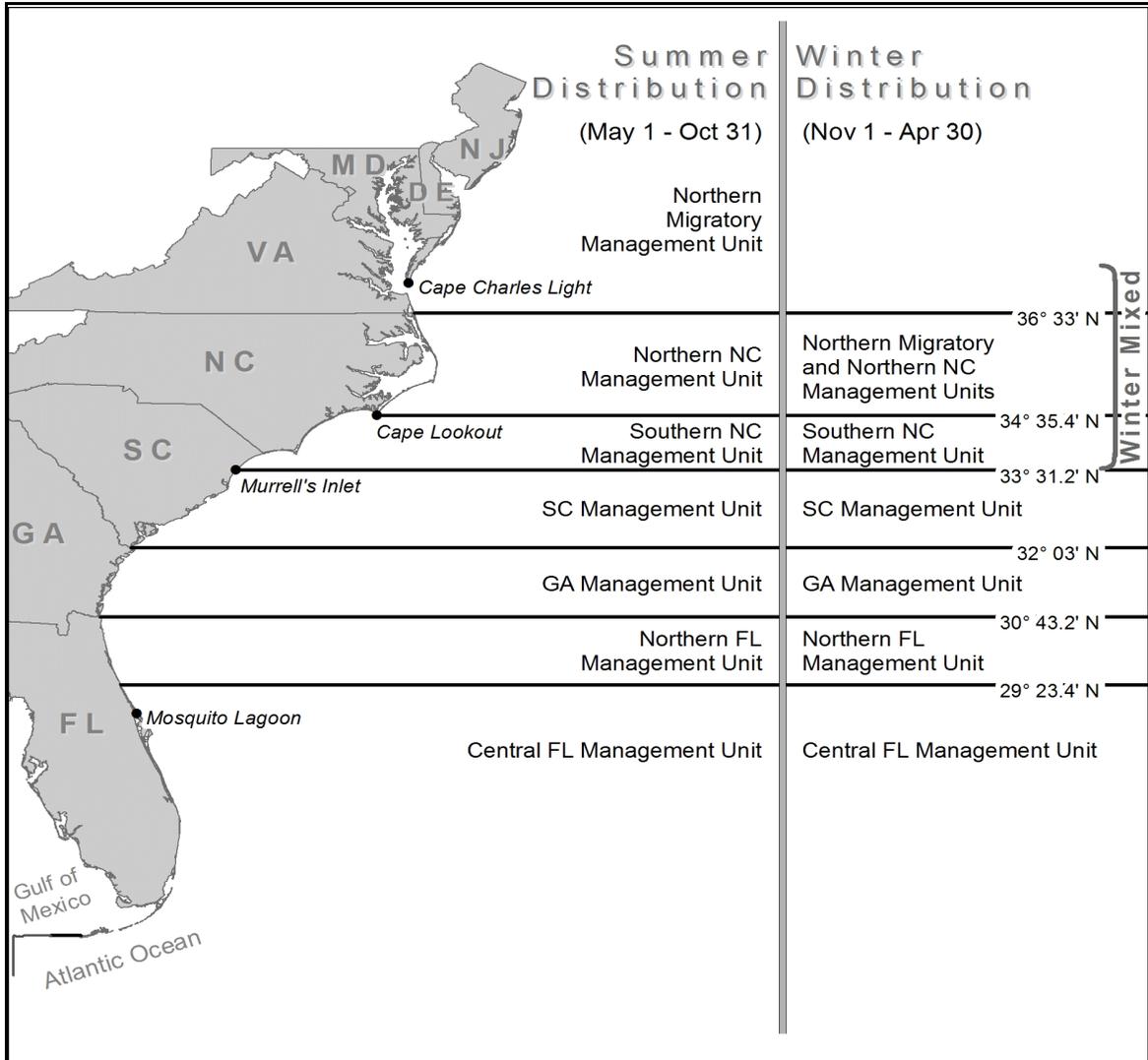
- (1) Northern Migratory MU during the summer (May 1 - October 31), which is from the New York/New Jersey border to the Virginia/North Carolina border (north of 36° 33' N.). In the winter (November 1 - April 30), the Northern Migratory, Northern North Carolina, and Southern North Carolina MUs overlap along the coast of North Carolina and southern Virginia and are referred to as the Winter Mixed MU;
- (2) Northern North Carolina MU during the summer (May 1-October 31), which ranges from the Virginia/North Carolina border to Cape Lookout, North Carolina (36° 33' N.- 34° 35.4' N.). In the winter (November 1 - April 30), the Northern Migratory, Northern North Carolina, and Southern North Carolina MUs overlap along the coast of North Carolina and southern Virginia and are referred to as the Winter Mixed MU;
- (3) Southern North Carolina MU during the summer (May 1-October 31), which ranges from Cape Lookout, North Carolina to Murrell's Inlet, South Carolina (34° 35.4' N. - 33° 31.2' N.). In the winter (November 1 - April 30), the Northern Migratory, Northern North Carolina, and Southern North Carolina MUs overlap along the coast of North Carolina and southern Virginia and are referred to as the Winter Mixed MU;
- (4) South Carolina MU during the summer (May 1 - October 31) and winter (November 1 - April 30), which ranges from Murrell's Inlet, South Carolina to the South Carolina/Georgia border (33° 31.2' N. - 32° 03' N.);

(5) Georgia MU during the summer (May 1 - October 31) and winter (November 1 - April 30), which ranges from the Georgia/South Carolina border to the Georgia/Florida border ($32^{\circ} 03' \text{ N.} - 30^{\circ} 43.2' \text{ N.}$);

(6) Northern Florida MU during the summer (May 1 - October 31) and winter (November 1 - April 30), which ranges from the Georgia/Florida border to just north of Mosquito Lagoon, Florida ($30^{\circ} 43.2' \text{ N.} - 29^{\circ} 23.4' \text{ N.}$); and

(7) Central Florida MU during the summer (May 1 - October 31) and winter (November 1 - April 30), which ranges from just north of Mosquito Lagoon, Florida south along the east coast of Florida (south of $29^{\circ} 23.4' \text{ N.}$).

Figure 1: Seasonal and geographic distributions of management units within the western North Atlantic coastal bottlenose dolphin stock, *Tursiops truncatus*.



The seven management units listed above, together, comprise the western North Atlantic coastal bottlenose dolphin stock. The term stock will hereafter only be used to refer to this complex group of management units. Furthermore, the term management unit will hereafter refer to one of the seven geographic and seasonally distributed components of the western North Atlantic coastal bottlenose dolphin stock.

Current data also indicate there are two distinct morphotypes of bottlenose dolphins in the western North Atlantic, the offshore and the coastal (Garrison 2001a; Waring et al. 2002). The coastal morphotype of bottlenose dolphins is found along the North Atlantic coast from the area south of Long Island, New York, around the peninsula of Florida, and along the Gulf of Mexico coast. The western North Atlantic coastal animals and the northern Gulf of Mexico coastal animals, however, were determined to be different stocks based upon mitochondrial DNA haplotype frequencies. Additional population structure within the western North Atlantic coastal bottlenose dolphins was identified based upon genetic, stable isotope ratio, photo-identification, and telemetry studies (Waring et al. 2002).

NMFS also studied the distribution of coastal bottlenose dolphins as a function of distance from shore to determine spatial patterns (Waring et al. 2002). One survey was conducted during the summer of 1995 between Cape Hatteras, North Carolina, and Sandy Hook, New Jersey, and included three replicate surveys. The second survey was conducted during the winter of 1995 between Cape Hatteras, North Carolina, and Ft. Pierce, Florida. Extensive systematic biopsy sampling efforts were conducted using small vessels in the summers of 2001 and 2002. These efforts supplemented biopsy sample collections from large vessel surveys over the Atlantic continental shelf conducted during the summers of 1998 and 1999. During the winters of 2002 and 2003, additional biopsy collection efforts were conducted in nearshore continental shelf waters of North Carolina and Georgia. A small number of additional biopsy samples were collected in deeper continental shelf waters during a large vessel survey in winter 2002 (Garrison et al. 2002). Genetic analyses of the biopsies collected during these surveys were used to determine if the sample came from the coastal or offshore morphotype of bottlenose dolphin. Based upon these results, a logistic regression approach was used to model the probability that a particular bottlenose dolphin group is of the coastal morphotype as a function of environmental variables including depth, sea surface temperature, and distance from shore.

The genetic results and spatial patterns observed in aerial surveys indicate both regional and seasonal differences in the longitudinal distribution of the two morphotypes in coastal Atlantic waters. North of Cape Lookout, North Carolina (i.e., northern migratory and northern North Carolina management units) during summer months, the previously observed pattern of strong nearshore aggregation of bottlenose dolphins was again observed. All biopsy samples collected from nearshore waters [less than 66 ft (20 m) depth] were of the coastal morphotype and all offshore samples [greater than 131 ft (40 m) depth] were of the offshore morphotype. The genetic results thus confirm separation of the two populations in this region during summer months. South of Cape Lookout to northern Florida, the probability of an observed bottlenose dolphin group being of the coastal morphotype declined with increasing depth. Offshore morphotype

bottlenose dolphins were observed at depths as shallow as 43 ft (13 m), and coastal morphotype dolphins were observed at depths of 102 ft (31 m) and 40 nmi (75 km) from shore (Garrison et al. 2002). These results indicate significant overlap between the two morphotypes in the southern region during summer months.

Winter samples were collected primarily from nearshore waters in North Carolina and Georgia. The vast majority of samples collected in nearshore waters of North Carolina during winter were of the coastal morphotype; however, one offshore morphotype group was sampled during November just south of Cape Lookout, North Carolina only 4 nmi (7.3 km) from shore. Coastal morphotype samples were also collected farther away from shore at 108 ft (33 m) depth and 21 nmi (39 km) from shore. The logistic regression model for this region indicated a decline in the probability of a coastal morphotype group with increasing distance from shore; however, the model predictions may be uncertain due to the limited sample sizes and the high overlap between the two morphotypes. Samples collected in Georgia waters also indicated significant overlap between the two morphotypes with a declining probability of the coastal morphotype with increasing depth. A coastal morphotype sample was collected well offshore at a distance of 60 nmi (112 km) from shore and a depth of 125 ft (38 m). An offshore sample was collected in 72 ft (22 m) depth at 22 nmi (40 km) from shore. As with the North Carolina model, the Georgia logistic regression predictions may be uncertain due to limited sample size and high overlap between the two morphotypes (Garrison et al. 2002). The logistic regression models provide a tool to predict the probability that an observed bottlenose dolphin group is of the coastal morphotype as a function of habitat variables and spatial location. There remain significant sampling gaps in the biopsy collections, particularly during winter months, that increase the uncertainty of model predictions. Regardless, both the predicted probability of a coastal morphotype occurring and the associated uncertainty in that prediction is incorporated into the abundance estimates for coastal morphotype bottlenose dolphin management units. NMFS continues to collect biopsy samples from bottlenose dolphins throughout the possible range of the coastal morphotype so that stock delineation can be more accurately determined. Therefore, based on biopsy studies and the distribution of dolphins observed during the above mentioned surveys, the eastern boundary for the coastal morphotype was set at 6.5 nmi (12 km) from shore from the New York-New Jersey border to Cape Hatteras, North Carolina and within 14.6 nmi (27 km) of shore from Cape Hatteras, North Carolina southward to, and including, the east coast of Florida. NMFS intends to conduct additional aerial surveys and genetic sampling in the southeastern waters in order to better understand the stock structure and if, how, and where any mixing is occurring between the coastal and offshore morphotypes.

3.2.2.1.3 Management Units Abundance Estimates

Abundance estimates are the basis for determining PBR for marine mammal stocks. Two sets of abundance estimates were presented to the BDTRT. The first such estimate was based on combined results from the analyses of a combination of surveys conducted in 1995. Concerns about the utility of this abundance estimate by the BDTRT included the potential for bias (e.g., under- or over-counting) due to the difficulty in determining the ratio of coastal versus offshore

dolphins in the areas counted, limitations in the geographic coverage of the counts, and the question of whether the combined estimate from 1995 (now based on data more than eight years old) was a reliable current abundance. According to the 2002 SAR, not only did this 1995 survey base the results on a one stock theory, but it did not correct for visibility bias, and therefore, did not provide complete seasonal and spatial coverage for the more recently defined management units. Because of these reservations the BDTRT recommended that NMFS conduct new surveys to better estimate coastal bottlenose dolphin abundance. This updated survey assessment was based on a more appropriate and robust experimental survey design, but was confounded by uncertainty regarding the number of offshore dolphins that may have been incidentally counted. To better estimate abundance more systematically, survey tracks were set perpendicular to the shoreline and included coastal waters to depths of 131 ft (40 m). The surveys employed a stratified design so that most effort was expended in waters shallower than 66 ft (20 m) depth where a high proportion of observed bottlenose dolphins were expected and assumed to be of the coastal morphotype. Survey effort was also stratified to optimize coverage in seasonal management units. The surveys employed two observer teams operating independently on the same aircraft as an approach to estimate and account for sources of visibility bias. The 2002 winter survey included the region from the Georgia/Florida state line to the southern edge of Delaware Bay. A total of 2,114 individual animals were sighted, and were composed of 185 groups and a total of 3,462 nmi (6,411 km) of track line. No bottlenose dolphins were sighted north of Chesapeake Bay corresponding to water temperatures less than 9.5 degrees Celsius. During the summer survey leg, 3,636 nmi (6,734 km) of track line were completed between New Jersey and Ft. Pierce, Florida. All track lines were completed in the 0-66 ft (0-20 m) depth through the survey range while offshore lines were completed only as far south as the Georgia-Florida state line. A total of 185 groups were spotted which consisted of 2,544 individuals. Abundance was estimated using the line transect and distance analysis by Buckland et al. 1993. Using the direct duplicate estimator by Palka (1985), the independent and joint estimates from the two survey teams were used to quantify and correct for any missed animals. Logistic regression models and spatial analysis was used to further correct for coastal and offshore differentiation during sampling. Further, Garrison (2003) used a parametric bootstrap method to decrease the uncertainty in the abundance estimates of each of the management units.

For both sets of surveys, the inability of surveyors to distinguish between coastal and offshore bottlenose dolphins is a source of uncertainty and potential bias. However, NMFS believes that the 2002 abundance estimate is a more suitable estimate than the previous 1995 abundance estimate.

The 2002 abundance estimates provide the best available data on the abundance of bottlenose dolphins. Therefore, the BDTRT used these numbers to develop its final take reduction recommendations (Table 1).

Table 1: 2002 Abundance estimates and the associated coefficient of variation (CV) and minimum population estimate (Nmin) for each management unit of coastal bottlenose dolphins (Garrison et al. 2003).

Management Units	Abundance	CV	Nmin
SUMMER (May - October)			
Northern Migratory	17,466	19.1	14,621
Northern North Carolina			
Oceanic	6,160	51.9	3,255
Estuary	919	12.5	828
BOTH	7,079	45.2	4,083
Southern North Carolina			
Oceanic	3,646	111.0	1,863
Estuary	141	15.2	124
BOTH	3,787	106.9	1,987
WINTER (November - April)			
Mixed Stock (Northern Migratory, Northern North Carolina, Southern North Carolina)	16,913	23.0	13,558
ALL YEAR			
South Carolina	2,325	20.3	1,963
Georgia	2,195	29.9	1,716
Northern Florida *	448	38.4	328
Central Florida *	10,652	45.8	7,377

*Northern Florida estimates are derived from the winter 1995 survey and the summer 2002 survey. Central Florida estimates are from the winter 1995 survey.

For these estimates, the surveys did not include any bottlenose dolphins found inshore (estuaries and bays). However, in estuarine waters in North Carolina, one study by Read et al. (2003) did

estimate abundance in inshore waters and these estimates were post-stratified to be consistent with the management unit definitions (Palka et al. 2000a).

3.2.2.1.4 Management Unit Bycatch Estimates and PBRs

The effectiveness of the recommended measures for this action can only be assessed if serious injury and mortality levels can be reliably estimated. Reliable estimation of bycatch is fundamental to the understanding, identification and solution of fishery interaction problems. The most obvious consequence of this uncertainty is a lack of confidence in the resulting bycatch estimates, which are a direct function of the level of observer effort relative to the bycatch rate. If bycatch is underestimated, the stock may be exposed to excessive levels of risk from human-caused bycatch. If bycatch is overestimated, then fishermen and fisheries may be unnecessarily impacted by regulations.

The MMPA defines PBR as the product of the minimum population size, one half the maximum productivity rate, and a recovery factor of between 0.1 and 1.0. A maximum net productivity level for most marine mammal stocks is assumed to occur at about 50 percent of the maximum productivity rate. According to Barlow et al. (1995), theoretical modeling indicates a maximum rate of increase of 4 percent for cetacean populations. Therefore, for the western North Atlantic coastal bottlenose dolphin stock, the maximum net productivity rate is assumed to be 0.04. For depleted stock(s) and stock(s) of unknown status, the recovery factor is assumed to be 0.50 (Wade and Angliss 1997). Considering little information is available regarding the recovery factor and optimum sustainable population size for coastal bottlenose dolphins, the recovery factor of 0.50 is used to calculate PBRs for coastal bottlenose dolphins.

Table 2 summarizes, for each MU, the estimates of serious injury and mortality (bycatch) of bottlenose dolphins, as well as PBR.

Table 2: Estimated bycatch for the mid-Atlantic beach-based and ocean gillnet fisheries in 2000 and southeast U.S. shark gillnet fishery from 1992 -2001, and current PBR estimates for each management unit of coastal bottlenose dolphins in the western North Atlantic. Shaded rows indicated MUs for which bycatch, as estimated from observer data, exceeds PBR.

Management Unit	Estimated Bycatch	Current PBR
Northern Migratory	30	73.1
Summer Northern North Carolina	29	20.4
Summer Southern North Carolina	0 ¹	9.9
Winter Mixed (Northern Migratory, Northern North Carolina, and Southern North Carolina)	151	67.8
South Carolina	Unknown	20
Georgia	Unknown	17
Northern Florida	0	3.3
Central Florida	4	74 ²

¹ No takes were officially recorded via the NMFS observer program but stranding data indicate takes do occur (see text below).

² The PBR for Central Florida is based on the 1995 abundance estimate, as no 2002 estimate is available.

Estimated bycatch for each MU is based on the mid-Atlantic beach-based and ocean gillnet fishery (New Jersey-North Carolina) bycatch estimates for the year 2000 from the reports by Palka and Rossman (2003 and 2004), and 4-1-03p (2003); and the 1992-2001 bycatch estimates for the Florida shark drift gillnet fishery (Garrison 2001 and 2003). The table provides a summary of bycatch estimates from observed fisheries only. Takes in other fisheries associated with this TRP have generally been documented via carcasses stranded with evidence of fishery interactions. Such incidents cannot be extrapolated over effort to obtain estimates of total bycatch attributable to a fishery; hence, bottlenose dolphin bycatch estimates are unavailable for the Virginia pound net fishery, Atlantic blue crab pot/trap fishery, long haul seine fishery, North Carolina roe mullet stop net fishery, or South Atlantic coastal gillnet fishery. This is also true of certain components of fisheries that are observed. For example, there was some observer effort in the fall spot gillnet fishery that occurs in southern North Carolina, which is part of the mid-Atlantic coastal gillnet fishery. Though no takes were observed (and thus a bycatch estimate of zero is attributed to this component of the fishery), Friedlaender et al. (2001) document two incidents of known interactions with this fishery. Furthermore, seven human interaction strandings were documented in this area during the dolphin summer season following the Friedlaender et al. (2001) publication. Five of these were confirmed to have been caused by fishery interactions (unpublished SEUS Stranding Network data).

Bycatch estimates exceed PBR for two of the seven MUs: the Summer Northern North Carolina MU and the Winter Mixed MU. However, NMFS provided the BDTRT with evidence from strandings suggesting bottlenose dolphin/fishery interaction problems in some of the other management units. Therefore, NMFS requested the BDTRT provide recommendations, based on these updated data, that will achieve the PBR goals for each coastal dolphin management unit.

In order to develop effective management measures that decrease bottlenose dolphin bycatch rates for the management units that currently have bycatch that exceeds the PBR levels, the BDTRT further evaluated mid-Atlantic gillnet gear characteristics that may influence bycatch level. Analysis by Palka and Rossman (2001) concluded that the components that had the highest relationship with the bycatch estimates were the distance from shore and gillnet mesh size variables. Using standard generalized linear models (GLM) on data obtained from a sample of fishing trips that were observed by NMFS sampling program (1996-2000), the authors found that the highest bycatch rates of coastal bottlenose dolphins in mid-Atlantic gillnet fisheries occurred in large mesh gear (greater than or equal to 7-inch stretch mesh) and in hauls that occurred within state waters (3 nmi or 4.8 km). Palka and Rossman (2001) found that the highest bycatch estimates occurred in the Winter Mixed Management Unit, with most of the takes occurring off North Carolina waters and some takes occurring off Virginia waters. Palka and Rossman inferred that changes in state fisheries that utilize large mesh gear may have a considerable effect on reducing the bottlenose dolphin takes.

NMFS further evaluated the bycatch reduction potential of prohibiting gillnets in waters within set distances from shore including 1 km (0.53 nmi), 2 km (1.1 nmi), 3 km (1.6 nmi), and 4 km (2.2 nmi). Palka preliminarily evaluated the bycatch rates of hauls at those distances (2-27-02m). The analysis stated that there were relatively few hauls observed within 1 km (0.53 nmi) of shore; thereby indicating that the bycatch rates in that area “may not be reliable” (2-27-02m). For the majority of the management units, the bycatch rates of hauls within 2 km (1.1 nmi) of shore were statistically significantly higher than rates outside of the 2 km (1.1 nmi) strata (2-27-02 m). The same correlation applied for bycatch rates within 3 km (1.6 nmi) of shore (2-27-02m).

Palka and Rossman (2004, 4-1-03g) conducted a more detailed evaluation specifically looking at the bycatch reduction effect associated with prohibiting gillnetting within certain distances from shore. The following table (Table 3) summarizes some of the predicted bycatch estimates by MU described in this analysis.

Table 3: Bycatch Estimates for Coastal Bottlenose Dolphin in Coastal Ocean Gillnet Fisheries as a Function of Distance from Shore by Seasonal Management Unit.

Management Unit	Estimated Dolphin Bycatch by Distance From Shore			Status Quo	PBR
	2 km (1.1 nmi)	3 km (1.6 nmi)	4 km (2.2 nmi)		
Summer Northern Migratory (May 1- Oct. 31) (New Jersey through Virginia)	20 or 35	18 or 31	22 or 40	36	73
Summer Northern North Carolina (May 1- Oct. 31) (North Carolina/Virginia border to Cape Lookout)	21 or 39	20 or 38	26 or 49	26	20
Summer Southern North Carolina (May 1- Oct. 31) (Cape Lookout to North Carolina/South Carolina border)	0	0	0	0	9.9
Winter Mixed	30 or 49	28 or 46	39 or 65	59-61	68

Shaded cells denote where the management measure are expected to reduce bycatch below PBR. The Status Quo information was updated based on a new baseline established after the 4-1-03g document, specifically NMFS’ efforts to extend the federal sea turtle regulations into state waters.

The Summer Northern Migratory and Summer Southern North Carolina management units are already at or below PBR under Status Quo; therefore, area prohibitions will likely result in additional fishery costs not necessary to achieve PBR. Should NMFS implement a gillnet prohibition within 2 km (1.1 nmi) from shore or 4 km (2.2 nmi) from shore, the Summer Northern North Carolina management unit restrictions are not anticipated to reach the PBR goal; however, any of the three area restrictions in the Winter Mixed management unit could result in serious injury and mortality below PBR. For feasibility purposes, the Winter Mixed management unit was divided into three portions to better specialize the type of management measures most appropriate for the area and fisheries active. The area-specific recommendations were developed further as Alternatives considered in the EA.

3.2.2.2 Western North Atlantic Offshore Bottlenose Dolphins (*Tursiops truncatus*)

The offshore morphotype of bottlenose dolphin in the Western North Atlantic is not as well studied as the coastal morphotype. Abundance and distribution estimates are available only for EEZ waters north of Cape Hatteras, though recent information indicates that these dolphins may move between the Gulf of Mexico and the Atlantic. The best estimate of abundance for offshore bottlenose dolphins is 30,633, with a minimum population estimate of 24,897, and a PBR of 249.

Fishery interactions are more limited for the offshore morphotype, but still accounted for an estimated 27 bycatch incidents during 1996-2000. Because of the offshore range of this stock, interactions tend to occur in fisheries using such gear as pelagic longlines and deep water trawls, though interactions with other, coastal fisheries may still occur. Changes in gear usage as a result of the Preferred Alternative are expected to also reduce bycatch of the offshore stock.

3.2.2.3 Harbor Porpoise (*Phocoena phocoena*)

The Gulf of Maine/Bay of Fundy stock of harbor porpoise is found in U.S. and Canadian western Atlantic waters. Distribution varies seasonally, with the range reaching as far south as North Carolina during the winter months (January - March). Other Atlantic stocks include the Gulf of St. Lawrence, Newfoundland, and Greenland stocks, with some overlap in distribution occurring among the four stocks. The best estimate of abundance for the Gulf of Maine/Bay of Fundy stock is 89,700, with a minimum population estimate of 74,695. Current population trends and productivity rates cannot be ascertained at this time due to a lack of data. An assumed maximum net productivity rate of 4 percent (based on theoretical modeling for cetacean populations) was used to determine the PBR for this species (747) (Waring et al. 2002).

The status of this stock relative to OSP, and population trends in the US Atlantic EEZ, are unknown. However, in 1999 NMFS determined that listing the species under the ESA was not warranted, and in 2001 after further data review, the harbor porpoise was removed from the ESA candidate species list.

Fishery interactions are a source of bycatch for the harbor porpoise, but management efforts such as the Harbor Porpoise Take Reduction Plan (HPTRP) implemented January 1, 1999, have served to reduce bycatch of harbor porpoise. Recent sources of serious injury and mortality by fisheries include the US northeast sink gillnet, mid-Atlantic coastal gillnet, Canadian Bay of Fundy groundfish sink gillnet, and herring weir fisheries. Based on post-HPTRP data, the total annual estimated average human-caused mortality and serious injury is 459 porpoises per year. Management actions resulting from the Preferred Alternative may also benefit harbor porpoise where they overlap in distribution.

3.2.2.4 Humpback Whale (*Megaptera novaeangliae*)

The best estimate of abundance for the Gulf of Maine feeding aggregation of North Atlantic humpback whales is 920, and the minimum population estimate for this stock is 647 (Waring et al. 2002). For purposes of the current stock assessment, the maximum net productivity rate for

western North Atlantic humpback whales is assumed to be 0.072. The PBR for this stock is 1.3 humpback whales per year.

For the period 1996 through 2000, the total estimated human-caused mortality and serious injury to humpback whales in U.S. waters was estimated as 3.0 per year. This is derived from two components: (1) Records indicating bycatch rates of 2.8 per year, and (2) Vessel collision records which account for the remaining 0.2 per year.

A review of records suggests that there are likely significant human impacts beyond those recorded by NMFS' observer program. For instance, the results from research on marine mammal scarring and the number of unexamined animals indicates that there is likely additional serious injury and mortality not recorded by NMFS. Some of the humpback whales with serious or fatal injuries were found entangled in the area affected by this action, with heavy line, croaker gillnet gear, deep abrasions, blunt trauma, sink gillnet, and general line and netting (Waring et al. 2002). Details of disentanglement events are available from the NMFS Web site at (www.nero.nmfs.gov/ro/doc/nero.html). Management actions resulting from this action may also benefit humpback whales where they overlap in distribution.

3.2.2.5 Fin Whale (*Balaenoptera physalus*)

The best available estimate of abundance for the western North Atlantic fin whale is 2,814, and the minimum population estimate is 2,362 (Waring et al. 2002). For purposes of the current stock assessment, the maximum net productivity rate for fin whales is assumed to be 0.04, and the stock may have increased substantially in recent years. The PBR for this stock is 4.7.

Bycatch of fin whales is rarely documented. Because of the lack of stranded animals or other records of fishery related mortality or serious injury, NMFS has not calculated an average bycatch rate. NMFS believes that bycatch of fin whales occurs at a rate below 10 percent of PBR. A review of 26 records of stranded or floating (dead or injured) fin whales for the period of 1992 through 2000 showed that five had formerly been entangled in fishing gear. There were no reports of entangled fin whales in 2000. In 2001, one fin whale was reported with a minor entanglement, and it was determined that the whale was likely to free itself. There were additional records that lacked substantial evidence regarding the severity of the entanglement; therefore, the numbers above give a minimum estimate of bycatch for the species.

3.2.2.6 Minke Whale (*Balaenoptera acutorostrata*)

Minke whales off the eastern coast of the United States are considered to be part of the Canadian east coast population, which inhabits the area from the eastern half of Davis Strait south to the Gulf of Mexico. The best estimate of the population is 4,018, and the minimum population estimate is 3,515 (Waring et al. 2002). The current and maximum net productivity rates are not known, but the maximum rate is assumed to be 0.04. The PBR for this stock is 35.

The mid-Atlantic coastal gillnet fishery was determined to be responsible for the take of a minke whale in July 1998 off Long Island, slightly outside the area affected by this rule. The gear used is comparable to that gear used elsewhere in the fishery and in the bottlenose dolphin habitat. Some of the gear associated with bycatch of minke whales includes unspecified fishing net, unspecified cable or line, seines, and gillnets, all of which are used in the fisheries affected by this rule. In 1990, one immature minke whale was entangled with line around its tail stock and stranded in Jacksonville, Florida. This is within the geographic area affected by the action. Management actions resulting from this action may benefit minke whales where they overlap in distribution with coastal bottlenose dolphins.

3.2.2.7 Western North Atlantic Right Whale (*Eubalaena glacialis*)

The North Atlantic right whale ranges from wintering and calving grounds in coastal waters of the southeastern United States to summer feeding and nursery grounds from New England waters north to the Bay of Fundy and the Scotian Shelf. Within that range, research suggests the existence of six major habitats or congregation areas including: coastal waters of the southeastern United States, the Great South Channel, Georges Bank/Gulf of Maine, Cape Cod and Massachusetts Bays, the Bay of Fundy, and the Scotian Shelf.

A 1998 census using photo-identification techniques resulted in a population estimate of 291 individuals, and because this was a nearly complete census it is assumed that this number is both the best as well as the minimum size estimate. This low population size indicates that the stock is well below OSP. Analysis conducted by the International Whaling Commission concluded that survival had declined in the 1990's. Additionally, an analysis of calving intervals through the 1997/1998 season suggests that the mean calving interval has increased since 1992 from 3.67 years to over 5 years (a significant trend), meaning that individual breeding females are not producing calves as frequently as they have in the past. The small population size and continuing decline of the population results in the PBR being set at zero.

Annual total estimated human-caused mortality and serious injury to right whales was estimated at 1.8 whales per year from 1996-2000 (1.0 from non-observed fishery entanglements and 0.8 from ship strikes) (Waring et al. 2002). This figure of 1.8 is a minimum estimate, as decomposed and/or unexamined carcasses that are reported may have been a result of bycatch or ship strike, but were not reported as such. Additionally, it is likely that many carcasses drift out to sea and are never recovered. Some of the actions in the BDTRP may benefit right whales (and other large whale species) since the measures will be in addition to those under the existing Atlantic Large Whale Take Reduction Plan. Details of right whale disentanglement events are available from the NMFS web site at www.nero.nmfs.gov/ro/doc/nero.html.

3.2.3 Sea Turtles

The following sea turtles are known to occur in the pelagic waters of the Atlantic: leatherback (*Dermochelys coriacea*), hawksbill (*Eretmochelys imbricata*), green (*Chelonia mydas*), Kemp's

ridley (*Lepidochelys kempii*), and loggerhead (*Caretta caretta*) sea turtles. Leatherback, hawksbill, Kemp's ridleys, and the Florida breeding population of green turtles are classified as endangered under the ESA. Loggerheads are designated as threatened. Interactions with fisheries, including inshore, nearshore, and offshore gillnets as well as pound nets, are a known source of mortality and injury to sea turtles. Further information on each individual species is provided below.

3.2.3.1 Loggerhead Sea Turtle (*Caretta caretta*)

The loggerhead sea turtle was listed as a threatened species on July 28, 1978. This species inhabits the continental shelves and estuarine environments along the margins of the Atlantic, Pacific, and Indian Oceans, and within the continental United States it nests from Louisiana to Virginia. The major nesting areas include coastal islands of Georgia, South Carolina, and North Carolina, and the Atlantic and Gulf coasts of Florida, with the bulk of the nesting occurring on the Atlantic coast of Florida. The pelagic waters of the North Atlantic and the Mediterranean Sea provide development habitat for small juveniles (NMFS and USFWS 1991).

Life history

In the western Atlantic, most loggerhead sea turtles nest from North Carolina to Florida and along the Gulf coast of Florida. There are five western Atlantic subpopulations, divided geographically as follows: (1) a northern nesting subpopulation, occurring from North Carolina to northeast Florida at about 29° N; (2) a south Florida nesting subpopulation, occurring from 29° N on the east coast to Sarasota on the west coast; (3) a Florida Panhandle nesting subpopulation, occurring at Eglin Air Force Base and the beaches near Panama City, Florida; (4) a Yucatán nesting subpopulation, occurring on the eastern Yucatán Peninsula, Mexico (Márquez 1990 and TEWG 2000); and (5) a Dry Tortugas nesting subpopulation, occurring in the islands of the Dry Tortugas, near Key West, Florida (NMFS SEFSC 2001). The fidelity of nesting females to their nesting beaches is the reason these subpopulations can be differentiated from one another. Nesting beach fidelity prevents recolonization of nesting beaches by turtles from other subpopulations.

Mating takes place in late March-early June, and eggs are laid throughout the summer, with a mean clutch size of 100-126 eggs in the southeastern United States. Individual females nest multiple times during a nesting season, with a mean of 4.1 nests/individual (Murphy and Hopkins 1984). Nesting migrations for an individual female loggerhead are usually on an interval of 2-3 years, but can vary from 1-7 years (Dodd 1988). Generally, loggerhead sea turtles originating from the western Atlantic nesting aggregations are thought to lead a pelagic existence in the North Atlantic Gyre for as long as 7-12 years or more. Stranding records indicate that when pelagic immature loggerheads reach 40-60 cm straight-line carapace length they begin to live in coastal inshore and nearshore waters of the continental shelf throughout the U. S. Atlantic and Gulf of Mexico. Benthic immature loggerheads (sea turtles that have come back to inshore and near shore waters), the life stage following the pelagic immature stage, were found from Cape

Cod, Massachusetts, to southern Texas, and occasionally strand on beaches in northeastern Mexico.

Past literature gave an estimated age at maturity of 21-35 years (Frazer and Ehrhart 1985, Frazer et al. 1994) with the benthic immature stage lasting at least 10-25 years. However, based on new data from tag returns, strandings, and nesting surveys NMFS SEFSC (2001) estimates ages of maturity ranging from 20-38 years and benthic immature stage lasting from 14-32 years.

Pelagic and benthic juveniles are omnivorous and forage on crabs, mollusks, jellyfish, and vegetation at or near the surface (Dodd 1988). Sub-adult and adult loggerheads are primarily coastal and typically prey on benthic invertebrates such as mollusks and decapod crustaceans in hard bottom habitats.

Population Dynamics, Status, and Distribution

A number of stock assessments (TEWG 1998, TEWG 2000, and NMFS SEFSC 2001) have been conducted to examine the stock status of loggerheads in the waters of the United States, but assessments thus far have been unable to develop any reliable estimates of absolute population size. Based on nesting data of the five western Atlantic subpopulations, the south Florida-nesting and the northern-nesting subpopulations are the most abundant (TEWG 2000 and NMFS SEFSC 2001). The Turtle Expert Working Group's (TEWG) (2000) assessment of the status of these two better-studied populations concluded that the south Florida subpopulation is increasing, while no trend is evident (maybe stable but possibly declining) for the northern subpopulation. However, more recent analysis, including nesting data through 2003, indicate that there is no discernable trend in the south Florida nesting subpopulation (Witherington pers. comm.). Another consideration adding to the importance and vulnerability of the northern subpopulation is that NMFS' scientists estimate that the northern subpopulation produces 65 percent males (NMFS SEFSC 2001).

The latest and most extensive stock assessment (NMFS SEFSC 2001) assembled the best available information on loggerhead sea turtle life history and developed population models that can be used to predict the response of the loggerhead populations to changes in their mortality and survival. The new turtle excluder device rule (68 FR 8456, February 21, 2003) requiring larger openings is expected to reduce trawl related loggerhead mortality by 94 percent (Epperly et al. 2002). Based on the loggerhead population models in NMFS SEFSC (2001), this change in the mortality rate is expected to move the northern nesting population from stable to increasing.

The southeast U.S. nesting aggregation is second in size only to the nesting aggregation on islands in the Arabian Sea off Oman (Ross 1979, Ehrhart 1989, NMFS and USFWS 1993). The southeast U.S. nesting aggregation is especially important because the status of the Oman colony has not been evaluated recently. It is located in an area of the world where it is highly vulnerable to disruptive events such as political upheavals, wars, catastrophic oil spills, and lack of strong protections (Meylan et al. 1995).

Ongoing threats to the western Atlantic populations include incidental takes from dredging, commercial trawling, longline fisheries, and gill net fisheries; loss or degradation of nesting habitat from coastal development and beach armoring; disorientation of hatchlings by beachfront lighting; nest predation by native and non-native predators; degradation of foraging habitat; marine pollution and debris; vessel strikes; and disease.

3.2.3.2 Green Sea Turtle (*Chelonia mydas*)

Federal listing of the green sea turtle occurred on July 28, 1978, with all populations listed as threatened except for the Florida and Pacific coast of Mexico breeding populations, both of which are endangered. The complete nesting range of the green sea turtle within the NMFS' Southeast Region includes sandy beaches of mainland shores, barrier islands, coral islands, and volcanic islands between Texas and North Carolina and the U.S. Virgin Islands (U.S.V.I.) and Puerto Rico (NMFS and USFWS 1991a). Principal U.S. nesting areas for green sea turtles are in eastern Florida, predominantly Brevard through Broward counties (Ehrhart and Witherington 1992). Green sea turtle nesting also occurs regularly on St. Croix, U.S.V.I., and on Vieques, Culebra, Mona, and the main island of Puerto Rico (Mackay and Rebholz 1996).

Life history

Green sea turtle mating occurs in the waters off the nesting beaches. Each female deposits 1-7 clutches (usually 2-3) during the breeding season at 12-14 day intervals. Mean clutch size is highly variable among populations, but averages 110-115 eggs/nest. Females usually have 2-4 or more years between breeding seasons, while males may mate every year (Balazs 1983). After hatching, green sea turtles go through a post-hatchling pelagic stage where they are associated with drift lines of algae and other debris.

Green sea turtle foraging areas in the southeastern United States include any coastal shallow waters having macroalgae or sea grasses near mainland coastlines, islands, reefs, or shelves, and any open-ocean surface waters, especially where advection from wind and currents concentrates pelagic organisms (Hirth 1997, NMFS and USFWS 1991a). Principal benthic foraging areas in the southeastern United States include Aransas Bay, Matagorda Bay, Laguna Madre, and the Gulf inlets of Texas (Doughty 1984, Hildebrand 1982, Shaver 1994), the Gulf of Mexico off Florida from Yankeetown to Tarpon Springs (Caldwell and Carr 1957, Carr 1984), Florida Bay and the Florida Keys (Schroeder and Foley 1995), the Indian River Lagoon System, Florida (Ehrhart 1983), and the Atlantic Ocean off Florida from Brevard through Broward counties (Wershoven and Wershoven 1992, Guseman and Ehrhart 1992). Adults of both sexes are presumed to migrate between nesting and foraging habitats along corridors adjacent to coastlines and reefs. Age at sexual maturity is estimated to be between 20-50 years (Balazs 1982, Frazer and Ehrhart 1985).

Green sea turtles are primarily herbivorous, feeding on algae and sea grasses, but they also occasionally consume jellyfish and sponges. The post-hatchling, pelagic-stage individuals are assumed to be omnivorous, but little data on this are available.

Population Dynamics, Status, and Distribution

The vast majority of green sea turtle nesting within the southeastern United States occurs in Florida (Meylan et al. 1995, Johnson and Ehrhart 1994). It is unclear how greatly green sea turtle nesting in the whole of Florida was reduced from historical levels (Dodd 1981). However, based on 1989-2002 nesting information, green sea turtle nesting in Florida is increasing (Florida Marine Research Institute Statewide 2002 Nesting Database). Total nest counts and trends at index beach sites during the past decade suggest that green sea turtles that nest within the southeastern United States are increasing.

There are no reliable estimates of the number of immature green sea turtles that inhabit coastal areas of the southeastern United States (where they come to forage). However, information on incidental captures of immature green sea turtles at the St. Lucie Power Plant (they have averaged 215 green sea turtle captures per year since 1977) in St. Lucie County, Florida (on the Atlantic coast of Florida) show that the annual number of immature green turtles captured has increased significantly in the past 26 years (FPL 2002). It is not known whether or not this increase is indicative of the whole east coast of Florida or just a local increase.

It is likely that immature green sea turtles foraging in the southeastern United States come from multiple genetic stocks; therefore, the status of immature green sea turtles in the southeastern United States might also be assessed from trends at all of the main regional nesting beaches, principally Florida, Yucatán, and Tortuguero. Trends at Florida beaches were previously discussed. Trends in nesting at Yucatán beaches cannot be assessed because of a lack of consistent beach surveys over time. Trends at Tortuguero (ca. 20,000-50,000 nests/year) showed a significant increase in nesting during the period 1971-1996 (Bjorndal et al. 1999), and later information has indicated that the increase has continued since that time (Schroeder pers. comm.). Therefore, it seems reasonable that there is an increase in immature green sea turtles inhabiting coastal areas of the southeastern United States; however, the magnitude of this increase is unknown.

The principal cause of past declines and extirpations of green sea turtle assemblages is the over-exploitation of green sea turtles for food and other products. Although intentional take of green sea turtles and their eggs is not extensive within the southeastern United States, green sea turtles that nest and forage in the region may spend large portions of their life history outside the region and outside U.S. jurisdiction, where exploitation is still a threat. However, there are still significant and ongoing threats to green sea turtles from human-related causes in the United States. These threats include beach armoring, erosion control, artificial lighting, beach disturbance (e.g., driving on the beach), pollution, and foraging habitat loss as a result of direct destruction by dredging, siltation, boat damage, and other human activities and with fishing gear. There is also the increasing threat from occurrences of green sea turtle fibropapillomatosis disease. Presently, this disease is cosmopolitan and is found to affect large numbers of animals in some areas, including Hawaii and Florida (Herbst 1994, Jacobson 1990, Jacobson et al. 1991).

3.2.3.3 Kemp's Ridley Sea Turtle (*Lepidochelys kempi*)

The Kemp's ridley was listed as endangered on December 2, 1970. Internationally, the Kemp's ridley is considered the most endangered sea turtle (Zwinenberg 1977, Groombridge 1982, TEWG 2000). Kemp's ridleys nest primarily at Rancho Nuevo, a stretch of beach in Mexico, Tamaulipas State. The species occurs mainly in coastal areas of the Gulf of Mexico and the northwestern Atlantic Ocean. Occasional individuals reach European waters (Brongersma 1972). Adults of this species are usually confined to the Gulf of Mexico, although adult-sized individuals sometimes are found on the east coast of the United States.

Life history

Females return to their nesting beach about every 2 years (TEWG 1998). Nesting occurs from April into July and is essentially limited to the beaches of the western Gulf of Mexico, near Rancho Nuevo in southern Tamaulipas, Mexico. The mean clutch size for Kemp's ridleys is 100 eggs/nest, with an average of 2.5 nests/female/season.

Benthic immature Kemp's ridleys were found along the east coast of the United States and in the Gulf of Mexico. Atlantic benthic immature sea turtles travel northward as the water warms to feed in the productive, coastal waters off Georgia through New England, returning southward with the onset of winter (Lutcavage and Musick 1985, Henwood and Ogren 1987, Ogren 1989). Studies suggest that benthic immature Kemp's ridleys stay in shallow, warm, nearshore waters in the northern Gulf of Mexico until cooling waters force them offshore or south along the Florida coast (Renaud 1995). Little is known of the movements of the post-hatchling stage (pelagic stage) within the Gulf. Studies have shown the post-hatchling pelagic stage varies from 1-4 or more years, and the benthic immature stage lasts 7-9 years (Schmid and Witzell 1997). The TEWG (1998) estimates age at maturity from 7-15 years.

Stomach contents of Kemp's ridleys along the lower Texas coast consisted of mainly nearshore crabs and mollusks, as well as fish, shrimp, and other foods considered to be shrimp fishery discards (Shaver 1991). Pelagic stage Kemp's ridleys presumably feed on the available sargassum and associated infauna or other epipelagic species found in the Gulf of Mexico.

Population Dynamics, Status, and Distribution

Of the seven extant species of sea turtles in the world, the Kemp's ridley has declined to the lowest population level. Most of the population of adult females nest on the Rancho Nuevo beaches (Pritchard 1969). When nesting aggregations at Rancho Nuevo were discovered in 1947, adult female populations were estimated to be in excess of 40,000 individuals (Hildebrand 1963). By the mid-1980s, nesting numbers were below 1,000 (with a low of 702 nests in 1985). However, observations of increased nesting (with 6,277 nests recorded in 2000) suggest that the decline in the ridley population has stopped and the population is now increasing (USFWS 2000).

A period of steady increase in benthic immature ridleys has occurred since 1990 and appears to be from increased hatchling production and an increase in survival rates of immature sea turtles beginning in 1990. The increased survivorship of immature sea turtles is due in part to the

introduction of turtle excluder devices (TEDs) in the United States and Mexican shrimping fleets. As demonstrated by nesting increases at the main nesting sites in Mexico, adult ridley numbers have grown. The population model used by TEWG (2000) projected that Kemp's ridleys could reach the Recovery Plan's intermediate recovery goal of 10,000 nesters, by the year 2015.

The largest contributor to the decline of the ridley in the past was commercial and local exploitation, especially poaching of nests at the Rancho Nuevo site, as well as the Gulf of Mexico trawl fisheries. The advent of TED regulations for trawlers and protections for the nesting beaches have allowed the species to begin to rebound. Many threats to the future of the species remain, including interactions with fishery gear, marine pollution, foraging habitat destruction, illegal poaching of nests and potential threats to the nesting beaches from such sources as global climate change, development, and tourism pressures.

3.2.3.4 Leatherback Sea Turtle (*Dermochelys coriacea*)

The leatherback was listed as endangered on June 2, 1970. Leatherbacks are widely distributed throughout the oceans of the world, and are found in waters of the Atlantic, Pacific, and Indian oceans; the Caribbean Sea; and the Gulf of Mexico (Ernst and Barbour 1972). Adult leatherbacks forage in temperate and subpolar regions from 71°N to 47°S latitude in all oceans and undergo extensive migrations between 90°N and 20°S, to and from the tropical nesting beaches. In the Atlantic Ocean, leatherbacks were recorded as far north as Newfoundland, Canada, and Norway, and as far south as Uruguay, Argentina, and South Africa (NMFS SEFSC 2001). Female leatherbacks nest from the southeastern United States to southern Brazil in the western Atlantic and from Mauritania to Angola in the eastern Atlantic. The most significant nesting beaches in the Atlantic, and perhaps in the world, are in French Guiana and Suriname (NMFS SEFSC 2001).

Life History

Genetic analyses of leatherbacks to date indicate that within the Atlantic basin there are genetically different nesting populations; the St. Croix nesting population (U.S. Virgin Islands), the mainland nesting Caribbean population (Florida, Costa Rica, Suriname/French Guiana) and the Trinidad nesting population (Dutton et al. 1999). When the hatchlings leave the nesting beaches, they move offshore but eventually utilize both coastal and pelagic waters. Very little is known about the pelagic habits of the hatchlings and juveniles, and they have not been documented to be associated with the sargassum areas as are other species. Leatherbacks are deep divers, with recorded dives to depths in excess of 1,000 m (Eckert et al. 1989).

Leatherbacks are a long-lived species, living for over 30 years. They reach sexual maturity somewhat faster than other sea turtles, with an estimated range from 3-6 years (Rhodin 1985) to 13-14 years (Zug and Parham 1996). They nest frequently (up to 7 nests per year) during a nesting season and nest about every 2-3 years. During each nesting, they produce 100 eggs or more in each clutch, and thus, can produce 700 eggs or more per nesting season (Schultz 1975).

Leatherbacks are the most pelagic of the sea turtles, but enter coastal waters on a seasonal basis to feed in areas where jellyfish are concentrated. Leatherback sea turtles feed primarily on cnidarians (medusae, siphonophores) and tunicates.

Population dynamics, status, and distribution

The Pacific population is in a critical state of decline, estimated by Spotila et al. (2000) to number less than 3,000 total adult and subadult animals. The status of the Atlantic population is less clear. In 1996, it was reported to be stable, at best (Spotila et al. 1996), with numbers of nesting females in the western Atlantic reported to be on the order of 18,800. However, according to Spotila (pers. comm.), the western Atlantic population currently numbers about 15,000 nesting females. According to NMFS SEFSC (2001), the nesting aggregation in French Guiana has declined at about 15 percent per year since 1987. However from 1979-1986, the number of nests was increasing at about 15 percent annually which could mean that this current 15 percent decline could be part of a nesting cycle that coincides with the erosion cycle of Guiana beaches described by Schultz (1975). In Suriname, leatherback nest numbers have shown large recent increases (with more than 10,000 nests per year since 1999 and a peak of 30,000 nests in 2001) and the long-term trend for the overall Suriname and French Guiana population seems to show an increase (Girondot 2002). The number of nests in Florida and the U.S. Caribbean has increased at about 10.3 percent and 7.5 percent, respectively, per year since the early 1980s but the magnitude of nesting is much smaller than that along the French Guiana coast (NMFS SEFSC 2001). In summary, the conflicting information regarding the status of Atlantic leatherbacks makes it difficult to conclude whether or not the population is currently in decline. Numbers at some nesting sites are up, while at others they are down.

Zug and Parham (1996) pointed out that the main threats to leatherback populations in the Atlantic are the combination of fishery-related mortality (especially entanglement in gear and drowning in trawls) and the intense egg harvesting on the main nesting beaches. Other important ongoing threats to the population include pollution, loss of nesting habitat, and boat strikes.

3.2.3.5 Hawksbill Sea Turtle (*Eretmochelys imbricata*)

The hawksbill turtle was listed as endangered under the ESA (1973) on June 2, 1970, and is considered Critically Endangered by the International Union for the Conservation of Nature (IUCN). The hawksbill is a medium-sized sea turtle with adults in the Caribbean ranging in size from approximately 62.5 to 94.0 cm straight carapace length. The species occurs in all ocean basins although it is relatively rare in the Eastern Atlantic and Eastern Pacific, and absent from the Mediterranean Sea. Hawksbills are the most tropical of the marine turtles, ranging from approximately 30°N to 30° S. They are closely associated with coral reefs and other hard-bottom habitats, but they are also found in other habitats including inlets, bays and coastal lagoons (NMFS and USFWS 1993a).

There was an estimated global population decline of over 80 percent during the last three generations (105 years) (Meylan and Donnelly 1999). In the Western Atlantic, the largest

hawkbill nesting population occurs in the Yucatán Península of Mexico, where several thousand nests are recorded annually in the states of Campeche, Yucatán, and Quintana Roo (Garduño-Andrade et al. 1999). Important but significantly smaller nesting aggregations are documented elsewhere in the region in Puerto Rico, the U.S. Virgin Islands, Antigua, Barbados, Costa Rica, Cuba, and Jamaica (Meylan 1999a). Estimates of the annual number of nests for each of these areas are on the order of hundreds to a few thousand. Nesting within the southeastern U.S. and U.S. Caribbean is restricted to Puerto Rico (>650 nests/yr), the U.S. Virgin Islands (~400 nests/yr), and, rarely, Florida (0-4 nests/yr) (Eckert 1995; Meylan 1999a; Florida Statewide Nesting Beach Survey database 2002). At the two principal nesting beaches in the U.S. Caribbean where long-term monitoring was carried out, populations appear to be increasing (Mona Island, Puerto Rico) or stable (Buck Island Reef National Monument, St. Croix, USVI) (Meylan 1999a).

3.2.4 Teleosts, Elasmobranchs and Crustaceans

Since the action is directed at the Mid-Atlantic coastal gillnet fishery, the Virginia pound net fishery, the Mid-Atlantic haul/beach seine fishery, the Atlantic blue crab trap/pot fishery, the North Carolina inshore gillnet fishery, the North Carolina roe mullet stop net fishery, the North Carolina long haul seine fishery, the Southeast Atlantic gillnet fishery, and the Southeastern U.S. Atlantic shark gillnet fishery, the following stocks of fish may be affected: striped mullet, monkfish, bluefish, Atlantic croaker, striped bass, southern flounder, Atlantic mackerel, butterfish, white perch, spot, Northern kingfish, bonito, weakfish, black drum, shad, American menhaden, spotted seatrout, smooth and spiny dogfish and small coastal sharks, such as blacktip and finetooth sharks, skates, and the Atlantic blue crab.

3.3 HUMAN COMMUNITIES

Historically, limited information on fishing communities was systematically gathered. Human community research is difficult to assess because of the instability, complexity, and mobility of the fishing industry. Another reason is that census data do not differentiate between fishery and forestry occupations, and concerns about identifying individuals, businesses, and privileged information limits the publication of economic data that will be useful for studying the economic importance of fishing activities. Additionally, many fishing communities are unincorporated or are parts of larger communities that do not rely on fishing (for example, Los Angeles). Also, many fishing community members only fish part time, or hold other jobs while they fish.

The 1996 revision of the Magnuson-Stevens Fishery Conservation and Management Act, which is the basis for fisheries management in the United States, recognizes the importance of human communities and their relationship to fisheries. Among other things, its National Standard 8 declares that fishery conservation must take into account the importance of fishery resources to fishing communities, with the goals of providing for the “sustained participation” of those communities in fisheries and minimizing “adverse economic impacts” as much as possible. This focus on communities represents a shift taking place in many areas of natural resource

management. However, funding for studying the effects of management on communities remains at a low level.

3.3.1 Economic Data

3.3.1.1 Landings and Revenue

3.3.1.1.1 Delaware, Maryland and New Jersey

Available economic data utilized are limited to vessels that fish specific gears (gillnets) in certain areas (ocean waters). As such, the relevant data do not represent all commercial activity from these states. For the Delaware-Maryland-New Jersey area (DMN), 23 unique participants were identified as having recorded landings using gillnet gear in the 2001 fishing season (November 2000-October 2001). This fleet has historically been larger but has decreased in recent years due to stringent measures in other fisheries, such as the shad (ASMFC 1999) and dogfish fisheries (ASMFC 2002). These fishermen landed 3.2 million pounds (mp) of seafood, all species (finfish, bivalves, and crustaceans) and all gears included, with an ex-vessel value of \$1.9 million, for an average of approximately \$82,600 per vessel (Table 4). These vessels recorded approximately 2,300 trips, for an average of approximately 100 trips per vessel. Trips were predominantly single day trips (returning either the same day or within 24 hours of departure).

When examined by season, summer season activity accounted for 2.0 mp, or approximately 63 percent, of total landings, \$1.1 million, or approximately 58 percent of total ex-vessel revenues, and 1,600 trips, or approximately 70 percent of total effort. The winter season accounted for 1.2 mp, or approximately 37 percent of total landings, approximately \$800,000, or 42 percent of total ex-vessel revenues, and approximately 700 trips, or approximately 30 percent of total effort.

Over the course of the year, monkfish were targeted on more trips, 704, than any other species. These trips resulted in the harvest of 1.22 mp of fish, all species included, or 38 percent of total annual poundage, with an ex-vessel value of approximately \$985,000, or 53 percent of annual ex-vessel value. The next two most significant target species were bluefish (353 trips; 705,000 pounds, or 22 percent of total annual poundage; \$246,000, or 13 percent of annual ex-vessel value), and Atlantic croaker (330 trips; 450,000 pounds, or 14 percent of total annual poundage; \$150,000, or 8 percent of annual ex-vessel value).

Targeting activity by season mirrored annual activity with the exception that a single species dominated winter activity. For the summer season, the dominant target species were: monkfish (308 trips; 408,000 pounds, or 20 percent of seasonal poundage, 13 percent of annual poundage; \$327,000, or 31 percent of seasonal value, 17 percent of annual value), Atlantic croaker (329 trips; 448,000 pounds, or 22 percent of seasonal poundage, 14 percent of annual poundage; \$150,000, or 14 percent of seasonal ex-vessel value, 8 percent of annual ex-vessel value), and bluefish (317 trips; 620,000 pounds, or 31 percent of seasonal poundage, 19 percent of annual poundage; \$218,000, or 21 percent of seasonal ex-vessel value, 12 percent of ex-vessel value) were the dominant target species. For the winter season, the single dominant species was monkfish (396 trips; 815,000 pounds, or 68 percent of seasonal poundage, 25 percent of annual

poundage; \$658,000, or 81 percent of seasonal ex-vessel value, 35 percent of annual ex-vessel value).

Over the entire year, approximately 1,100 trips targeted small mesh gillnet species and landed 1.6 mp of fish, all species included, or 50 percent of the total annual landings by all vessels, with an ex-vessel value of approximately \$600,000, or 32 percent of the total annual ex-vessel revenue (Table 5). The medium mesh gillnet sector recorded approximately 100 trips and landed approximately 100,000 pounds, or 3 percent of the total annual landings by all vessels, with an ex-vessel value of approximately \$100,000, or 5 percent of the total annual ex-vessel revenue. The large mesh gillnet sector recorded approximately 700 trips and landed approximately 1.2 mp, or 38 percent of the total annual landings by all vessels, with an ex-vessel value of approximately \$1,000,000, or 53 percent of the total annual ex-vessel revenue. A total of approximately 400 trips were recorded that did not target any of the gillnet species and landed approximately 300,000 pounds, or 9 percent of the total annual landings by all vessels, with an ex-vessel value of approximately \$200,000, or 11 percent of the total annual ex-vessel revenue.

Table 6 presents harvest activity by season and compares seasonal mesh harvests with total annual harvests by those same participants for the entire year across all sectors. During the summer season, the small mesh gillnet sector accounted for 960 trips, 1.36 mp (43 percent of total annual landings by these vessels), and approximately \$518,000 in ex-vessel revenue (28 percent of total annual ex-vessel revenue). The medium mesh gillnet sector accounted for 35 trips, approximately 40,000 pounds (2 percent of total annual landings by these vessels), and approximately \$33,000 in ex-vessel revenue (3 percent of total annual ex-vessel revenue). The large mesh gillnet sector accounted for 308 trips, approximately 408,000 pounds (16 percent of total annual landings by these vessels), and approximately \$327,000 in ex-vessel revenue (22 percent of total annual ex-vessel revenue). During the winter season, the small mesh gillnet sector accounted for 169 trips, approximately 257,000 pounds (9 percent of total annual landings by these vessels), and approximately \$88,000 in ex-vessel revenue (5 percent of total annual ex-vessel revenue). The medium mesh gillnet sector accounted for 59 trips, approximately 73,000 pounds (4 percent of total annual landings by these vessels) and approximately \$35,000 in ex-vessel revenue (4 percent of total annual ex-vessel revenue), and the large mesh gillnet sector accounted for 396 trips, approximately 815,000 pounds (28 percent of total annual landings by these vessels), and approximately \$658,000 in ex-vessel revenue (39 percent of total annual ex-vessel revenue).

3.3.1.1.2 Virginia

For Virginia, 979 unique participants were identified as having recorded landings using gillnet gear in the 2001 fishing season (November 2000-October 2001). These fishermen landed approximately 29.0 mp of seafood, all species (finfish, bivalves, and crustaceans) and all gears included, with an ex-vessel value of approximately \$19.2 million, for an average of approximately \$19,600 per vessel (Table 7). These vessels recorded a total of approximately 63,800 trips, for an average of 65 trips per vessel.

When examined by season, summer season activity accounted for approximately 21.2 mp, or 73 percent of total landings, approximately \$13.1 million, or 68 percent of total ex-vessel revenues, and approximately 48,000 trips, or 75 percent of total effort. The winter season accounted for approximately 7.8 mp, or 27 percent of total landings, approximately \$6.1 million, or 32 percent of total ex-vessel revenues, and approximately 15,900 trips, or 25 percent of total effort.

Over the course of the year, blue crab were targeted on more trips, 39,093, than any other species. It should be noted that these are not assumed to be gillnet trips or harvests but are, rather, an indication that participants who use gillnets for some portion of the year diversify their fishing activity with other gears. These trips resulted in the harvest of 9.66 mp of fish, all species included, or 33 percent of total annual poundage, with an ex-vessel value of approximately \$9.83 million (51 percent of annual ex-vessel value). The next two most significant target species were other species (7,801 trips; 3.21 mp, or 11 percent of total annual poundage; \$1.91 million, or 10 percent of annual ex-vessel value), and Atlantic croaker (5,091 trips; 7.74 mp, or 27 percent of total annual poundage; \$2.24 million, or 12 percent of annual ex-vessel value).

As previously described, summer activity dominated total effort, and this is reflected when examining target activity by season. For the summer season, the dominant target species were: blue crab (34,281 trips; 8.16 mp, or 38 percent of seasonal poundage, 28 percent of annual poundage; \$8.44 million, or 64 percent of seasonal value, 44 percent of annual value), Atlantic croaker (3,572 trips; 5.52 mp, or 26 percent of seasonal poundage, 19 percent of annual poundage; \$1.53 million, or 12 percent of seasonal ex-vessel value, 8 percent of annual ex-vessel value), and spot (3,519 trips; 3.11 mp, or 15 percent of seasonal poundage, 11 percent of annual poundage; \$1.23 million, or 9 percent of seasonal ex-vessel value, 6 percent of ex-vessel value). For the winter season, the dominant target species were: blue crab (4,812 trips; 1.50 mp, or 19 percent of seasonal poundage, 5 percent of annual poundage; \$1.37 million, or 22 percent of seasonal ex-vessel value, 7 percent of annual ex-vessel value), Atlantic croaker (1,519 trips; 2.23 mp, or 29 percent of seasonal poundage, 8 percent of annual poundage; \$708,000, or 12 percent of seasonal ex-vessel value, 4 percent of annual ex-vessel value), other species (3,895 trips; 1.01 mp, or 13 percent of seasonal poundage, 4 percent of annual poundage; \$803,000, or 13 percent of seasonal ex-vessel value, 4 percent of annual ex-vessel value), and striped bass (3,826 trips; 1.83 mp, or 23 percent of seasonal poundage, 6 percent of annual poundage; \$2.66 million, or 44 percent of seasonal ex-vessel value, 14 percent of annual ex-vessel value).

When evaluated by gillnet mesh size, as determined by harvest composition over the entire year approximately 11,900 trips targeted small mesh gillnet species and landed approximately 13.7 mp of fish, all species included, or 47 percent of the total annual landings by all vessels, with an ex-vessel value of approximately \$4.5 million, or 23 percent of the total annual ex-vessel revenue (Table 8; Table 8b provides similar information for the Virginia ocean gillnet fishery). The medium mesh gillnet sector recorded approximately 800 trips and landed approximately 600,000 pounds, or 2 percent of the total annual landings by all vessels, with an ex-vessel value of approximately \$300,000, or 2 percent of the total annual ex-vessel revenue. The large mesh gillnet sector recorded approximately 4,300 trips and landed approximately 1.9 mp, or 7 percent

of the total annual landings by all vessels, with an ex-vessel value of approximately \$2.8 million, or 15 percent of the total annual ex-vessel revenue. A total of approximately 46,900 trips were recorded that did not target any of the gillnet species and landed approximately 12.9 mp, or 44 percent of the total annual landings by all vessels, with an ex-vessel value of approximately \$11.7 million, or 61 percent of the total annual ex-vessel revenue.

During the summer season, the small mesh gillnet sector accounted for 8,956 trips, approximately 10.46 mp (55 percent of total annual landings by these vessels), and approximately \$7.45 million in ex-vessel revenue (51 percent of total annual ex-vessel revenue). The medium mesh gillnet sector accounted for 418 trips, approximately 289,000 pounds (7 percent of total annual landings by these vessels), and approximately \$122,000 in ex-vessel revenue (5 percent of total annual ex-vessel revenue). The large mesh gillnet sector accounted for 409 trips, approximately 103,000 pounds (2 percent of total annual landings by these vessels), and approximately \$113,000 in ex-vessel revenue (2 percent of total annual ex-vessel revenue) (Table 9a; Tables b and c provide similar information for the seasonal Virginia gillnet fishery). During the winter season, the small mesh gillnet sector accounted for 2,900 trips, approximately 3.21 mp (19 percent of total annual landings by these vessels), and approximately \$2.68 million in ex-vessel revenue (20 percent of total annual ex-vessel revenue). The medium mesh gillnet sector accounted for 402 trips, approximately 273,000 pounds (4 percent of total annual landings by these vessels) and approximately \$148,000 in ex-vessel revenue (3 percent of total annual ex-vessel revenue). The large mesh gillnet sector accounted for 3,846 trips, approximately 1.84 mp (11 percent of total annual landings by these vessels), and approximately \$2.67 million in ex-vessel revenue (17 percent of total annual ex-vessel revenue).

3.3.1.1.3 North Carolina

For North Carolina, 2,077 unique participants were identified as having recorded landings using gillnet gear in the 2001 fishing season (November 2000-October 2001). These fishermen landed approximately 83.1 million pounds (mp) of seafood, all species (finfish, bivalves, and crustaceans) and all gears included, with an ex-vessel value of approximately \$77.1 million, for an average of approximately \$37,100 per vessel (Table 10). These vessels recorded approximately 133,700 trips, for an average of approximately 64 trips per vessel.

When examined by season, summer season activity accounted for approximately 56.2 mp, or 68 percent of total landings, approximately \$59.3 million, or 78 percent of total ex-vessel revenues, and approximately 88,900 trips, or 77 percent of total effort. The winter season accounted for approximately 26.9 mp, or 32 percent of total landings, approximately \$17.8 million, or 23 percent of total ex-vessel revenues, and approximately 44,800 trips, or 34 percent of total effort.

Over the course of the year, blue crab were targeted on more trips by fishermen who use gillnets for some portion of the year (56,642 trips) than any other species. These trips resulted in the harvest of approximately 42.87 mp of fish, all species included, or 52 percent of total annual

poundage, with an ex-vessel value of approximately \$42.20 million, or 55 percent of annual ex-vessel value. The next two most significant target species were other species (33,318 trips; 9.87 mp, or 12 percent of total annual poundage; \$12.77 million, or 17 percent of annual ex-vessel value), and flounder (summer and southern combined) (21,629 trips; 7.36 mp, or 9 percent of total annual poundage; \$11.61 million, or 15 percent of annual ex-vessel value).

When examining target activity by season, for summer, the dominant target species were: blue crab (49,923 trips; 39.58 mp, or 70 percent of seasonal poundage, 48 percent of annual poundage; \$39.22 million, or 66 percent of seasonal value, 51 percent of annual value), flounder (summer and southern combined) (16,961 trips; 5.50 mp, or 10 percent of seasonal poundage, 7 percent of annual poundage; \$8.51 million, or 14 percent of seasonal ex-vessel value, 11 percent of annual ex-vessel value), and other species (15,581 trips; 6.40 mp, or 11 percent of seasonal poundage, 8 percent of annual poundage; \$8.85 million, or 15 percent of seasonal ex-vessel value, 11 percent of ex-vessel value). For winter, the dominant target species were: other species (17,737 trips; 3.48 mp, or 13 percent of seasonal poundage, 4 percent of annual poundage; \$3.92 million or 22 percent of seasonal ex-vessel value, 5 percent of annual ex-vessel value), blue crab (6,719 trips; 3.29 mp, or 12 percent of seasonal poundage, 4 percent of annual poundage; \$2.98 million, or 17 percent of seasonal ex-vessel value, 4 percent of annual ex-vessel value), and Atlantic croaker (1,254 trips; 6.32 mp, or 23 percent of seasonal poundage, 8 percent of annual poundage; \$1.88 million, or 11 percent of seasonal ex-vessel value, 2 percent of annual ex-vessel value).

When evaluated by gillnet mesh size, as determined by harvest composition over the entire year, approximately 16,100 trips targeted small mesh gillnet species and landed approximately 19.8 mp of fish, all species included, or 24 percent of the total annual landings by all vessels, with an ex-vessel value of approximately \$7.7 million, or 10 percent of the total annual ex-vessel revenue (Table 11). The medium mesh gillnet sector recorded approximately 25,700 trips and landed approximately 10.0 mp, or 12 percent of the total annual landings by all vessels, with an ex-vessel value of approximately \$13.8 million, or 18 percent of the total annual ex-vessel revenue. The large mesh gillnet sector recorded approximately 1,900 trips and landed approximately 200,000 pounds, or less than 1 percent of the total annual landings by all vessels, with an ex-vessel value of approximately \$399,000, or 1 percent of the total annual ex-vessel revenue. Approximately 90,000 trips were recorded that did not target any of the gillnet species and landed approximately 53.1 mp, or 64 percent of the total annual landings by all vessels, with an ex-vessel value of approximately \$55.3 million, or 72 percent of the total annual ex-vessel revenue.

For participants in the ocean gillnet fishery (fishermen with recorded landings from ocean waters 0-3 miles) with landings recorded north of Cape Lookout (Table 12a), during the summer season, the small mesh ocean gillnet sector accounted for 939 trips, approximately 1.32 mp (6 percent of total annual landings by these vessels), and approximately \$0.96 million in ex-vessel revenue (5 percent of total annual ex-vessel revenue). The medium mesh ocean gillnet sector accounted for 140 trips, approximately 134,000 pounds (less than 1 percent of total annual landings by these

vessels), and approximately \$102,000 in ex-vessel revenue (less than 1 percent of total annual ex-vessel revenue). The large mesh ocean gillnet sector accounted for 2 trips, approximately 400 pounds (less than 1 percent of total annual landings by these vessels), and approximately \$100 in ex-vessel revenue (less than 1 percent of total annual ex-vessel revenue). During the winter season, the small mesh ocean gillnet sector accounted for 1,709 trips, approximately 6.48 mp (14 percent of total annual landings by these vessels), and approximately \$2.28 million in ex-vessel revenue (6 percent of total annual ex-vessel revenue). The medium mesh ocean gillnet sector accounted for 154 trips, approximately 487,000 pounds (1 percent of total annual landings by these vessels), and approximately \$283,000 in ex-vessel revenue (1 percent of total annual ex-vessel revenue). The large mesh ocean gillnet sector accounted for 651 trips, approximately 163,000 pounds (1 percent of total annual landings by these vessels), and approximately \$194,000 in ex-vessel revenue (1 percent of total annual ex-vessel revenue).

For participants in the ocean gillnet fishery (fishermen with recorded landings from ocean waters 0-3 miles) with landings recorded in Cape Lookout and southward (Table 12b) during the summer season, the small mesh ocean gillnet sector accounted for 724 trips, approximately 689,000 pounds (10 percent of total annual landings by these vessels), and approximately \$335,000 in ex-vessel revenue (5 percent of total annual ex-vessel revenue). The medium mesh ocean gillnet sector accounted for 50 trips, approximately 23,000 pounds (less than 1 percent of total annual landings by these vessels), and approximately \$16,000 in ex-vessel revenue (less than 1 percent of total annual ex-vessel revenue). No trips were recorded for the large mesh ocean gillnet sector. During the winter season, the small mesh ocean gillnet sector accounted for 1,260 trips, approximately 1.19 mp (17 percent of total annual landings by these vessels), and approximately \$572,000 in ex-vessel revenue (9 percent of total annual ex-vessel revenue). The medium mesh ocean gillnet sector accounted for 54 trips, approximately 22,000 pounds (less than 1 percent of total annual landings by these vessels), and approximately \$11,000 in ex-vessel revenue (less than 1 percent of total annual ex-vessel revenue). The large mesh ocean gillnet sector accounted for 36 trips, approximately 13,000 pounds (2 percent of total annual landings by these vessels), and approximately \$15,000 in ex-vessel revenue (2 percent of total annual ex-vessel revenue).

Eighty unique participants were identified as having participated in the North Carolina beach haul seine fishery in the 2001 fishing season (November 2000-October 2001). These fishermen landed approximately 3.43 mp of seafood, all species (finfish, bivalves, and crustaceans) included, with an ex-vessel value of approximately \$2.55 million, for an average of approximately \$32,000 per vessel. These vessels recorded a total of 5,842 trips, for an average of 73 trips per vessel. Beach haul seine trips only produced approximately 552,000 pounds of seafood, all species included, with an ex-vessel value of approximately \$348,000. There were 484 beach haul seine trips recorded.

3.3.1.1.4 North Carolina through New Jersey

For North Carolina through New Jersey, 3,079 unique participants were identified as having recorded landings using gillnet gear in the 2001 fishing season (November 2000-October 2001). These fishermen landed approximately 115.3 mp of seafood, all species (finfish, bivalves, and crustaceans) and all gears included, with an ex-vessel value of approximately \$98.2 million, for an average of approximately \$32,000 per vessel (Table 13). These vessels recorded a total of approximately 199,900 trips, for an average of 65 trips per vessel.

When examined by season, summer activity accounted for approximately 79.4 mp, or 69 percent of total landings, approximately \$73.5 million, or 75 percent of total ex-vessel revenues, and approximately 138,500 trips, or 69 percent of total effort. The winter season accounted for approximately 35.9 mp, or 31 percent of total landings, approximately \$24.7 million, or 25 percent of total ex-vessel revenues, and approximately 61,400 trips, or 31 percent of total effort.

When evaluated by gillnet mesh size, as determined by harvest composition over the entire year, approximately 29,100 trips targeted small mesh gillnet species and landed approximately 35.1 mp of fish, all species included, or 30 percent of the total annual landings by all vessels, with an ex-vessel value of approximately \$12.8 million, or 13 percent of the total annual ex-vessel revenue (Table 14). The medium mesh gillnet sector recorded approximately 26,600 trips and landed approximately 10.7 mp, or 9 percent of the total annual landings by all vessels, with an ex-vessel value of approximately \$14.2 million, or 14 percent of the total annual ex-vessel revenue. The large mesh gillnet sector recorded approximately 6,900 trips and landed approximately 3.3 mp, or 3 percent of the total annual landings by all vessels, with an ex-vessel value of approximately \$4.1 million, or 4 percent of the total annual ex-vessel revenue. Approximately 137,300 trips were recorded that did not target any of the gillnet species and landed approximately 66.3 mp, or 58 percent of the total annual landings by all vessels, with an ex-vessel value of approximately \$67.2 million, or 68 percent of the total annual ex-vessel revenue.

3.3.1.1.5 Atlantic Blue Crab Pot/Trap Fishery (Florida - New Jersey)

The following information on the Atlantic blue crab pot/trap fishery from Florida- New York is derived from Kirkley et al. (2001). Over the 1997-1999 fishing seasons, the Atlantic blue crab fishery averaged harvests of 122.83 mp with an ex-vessel of \$92.53 million. The total number of licensed participants in the blue crab pot/trap fishery is estimated to be approximately 14,000 fishermen. Combining total average ex-vessel revenues with the number of licensed participants results in an average of approximately \$6,600 in ex-vessel revenues from blue crab sales per participant. Averages by state ranged from a low of approximately \$2,000 for Florida licensees to a high of approximately \$24,000 for North Carolina licensees. It is not known, however, how many of the licensees are active participants in the fishery. Thus, the averages should be viewed with caution. Fishery harvests are dominated by the landings of three states, Maryland, Virginia and North Carolina, which together accounted for, on average, 79 percent of blue crab harvests and 77 percent of ex-vessel revenues.

Table 4: Summary statistics by season for participants in the Delaware, Maryland and New Jersey gillnet fishery, 2001 fishing season. These statistics include all harvests, ex-vessel value, and trips by these participants, regardless of the gear used. Totals and percentages may not sum exactly due to rounding.

Season	Harvest (lbs)	% Annual	Ex-vessel Value	% Annual	Trips	% Annual	Fishers*
Summer	2,000,000	63%	\$1,100,000	58%	1,600	70%	23
Winter	1,200,000	37%	\$800,000	42%	700	30%	23
Annual	3,200,000		\$1,900,000		2,300		23

*Not additive.

Table 5: Summary statistics by mesh size for participants in the Delaware, Maryland and New Jersey gillnet fishery, 2001 fishing season. These statistics include all harvests, ex-vessel value, and trips by these participants, regardless of the gear used. Totals and percentages may not sum exactly due to rounding.

Mesh Size	Harvest (lbs)	% Annual	Ex-vessel Value	% Annual	Trips	% Annual	Fishers**
Large	1,200,000	38%	\$1,000,000	53%	700	30%	18
Medium	100,000	3%	\$100,000	5%	100	4%	15
Small	1,600,000	50%	\$600,000	32%	1,100	48%	22
Other*	300,000	9%	\$200,000	11%	400	17%	22
Annual	3,200,000		\$1,900,000		2,300		23

* "Other" includes all gear other than gillnets.

**Not additive.

Table 6: Summary statistics by mesh size and season for participants in the Delaware, Maryland and New Jersey gillnet fishery, 2001 fishing season. These statistics include all harvests, ex-vessel value, and trips by these participants, regardless of the gear used. Totals and percentages may not sum exactly due to rounding.

Season	Mesh Size	Harvest (lbs)	% Annual**	Ex-vessel Value	% Annual**	Trips
Summer	Large	407,600	16%	\$327,100	22%	308
	Medium	40,000	2%	\$33,200	3%	35
	Small	1,362,200	43%	\$517,600	28%	960
	Other*	207,600	7%	\$184,500	11%	267
Winter	Large	814,700	28%	\$657,600	39%	396
	Medium	72,700	4%	\$34,500	4%	59
	Small	257,200	9%	\$87,800	5%	169
	Other*	59,600	3%	\$32,400	3%	89

* “Other” includes all gear other than gillnets.

** “% Annual” refers to the percent of the current “sector” harvest/revenue (all species by mesh size and season) relative to the total annual harvests/revenue (all species, all gear, all seasons) by the same individual fishing entities that contributed to the sector total. Since the “universe” of participants at each sector level potentially (likely) differ from that of any other/all other sector levels, these values are not additive. The values indicate the relative importance of harvests at that sector level to total annual harvests by these participants.

Table 7: Summary statistics by season for participants in the Virginia gillnet fishery, 2001 fishing season. These statistics include all harvests, ex-vessel value, and trips by these participants, regardless of the gear used. Totals and percentages may not sum exactly due to rounding.

Season	Harvest (lbs)	% Annual	Ex-vessel Value	% Annual	Trips	% Annual	Fishers*
Summer	21,200,000	73%	\$13,100,000	68%	48,000	75%	843
Winter	7,800,000	27%	\$6,100,000	32%	15,900	25%	770
Annual	29,000,000		\$19,200,000		63,800		979

*Not additive.

Table 8a: Summary statistics by mesh size for participants in the Virginia gillnet fishery, 2001 fishing season. These statistics include all harvests, ex-vessel value, and trips by these participants, regardless of the gear used. Totals and percentages may not sum exactly due to rounding.

Mesh Size	Harvest (lbs)	% Annual	Ex-vessel Value	% Annual	Trips	% Annual	Fishers**
Large	1,900,000	7%	\$2,800,000	15%	4,300	7%	396
Medium	600,000	2%	\$300,000	2%	800	1%	96
Small	13,700,000	47%	\$4,500,000	23%	11,900	19%	456
Other*	12,900,000	44%	\$11,700,000	61%	46,900	74%	800
Annual	29,000,000		\$19,200,000		63,800		979

* “Other” includes all gear other than gillnets.

**Not additive.

Table 8b: Summary statistics by mesh size for participants in the Virginia ocean gillnet fishery, 2001 fishing season. These statistics include all harvests, ex-vessel value, and trips by these participants, regardless of the gear used. Ocean waters are assumed to be water body codes 625 and 631 in the Virginia data coding system. Totals and percentages may not sum exactly due to rounding.

Mesh Size	Harvest (lbs)	% Annual	Ex-vessel Value	% Annual	Fishers**
Large	1,117,800	11%	\$1,651,000	25%	159
Medium	403,400	7%	\$204,500	7%	43
Small	1,672,700	21%	\$615,200	14%	85
Other*	160,900	4%	\$137,400	5%	45
Annual	3,354,800		\$2,608,100		194

* “Other” includes all gear other than gillnets

**Not additive.

Table 9a: Summary statistics by mesh size and season for participants in the Virginia gillnet fishery, 2001 fishing season. These statistics include all harvests, ex-vessel value, and trips by these participants, regardless of the gear used and area harvested. Totals and percentages may not sum exactly due to rounding.

Season	Mesh Size	Harvest (lbs)	% Annual**	Ex-vessel Value	% Annual**	Trips
Summer	Large	103,000	2%	\$112,500	2%	409
	Medium	288,900	7%	\$121,500	5%	418
	Small	10,460,200	55%	\$7,453,400	51%	8,956
	Other*	10,361,400	50%	\$9,628,600	52%	38,188
Winter	Large	1,836,400	11%	\$2,670,100	17%	3,846
	Medium	272,700	4%	\$148,200	3%	402
	Small	3,207,000	19%	\$2,676,300	20%	2,900
	Other*	2,511,200	11%	\$2,219,200	12%	8,707

* “Other” includes all gear other than gillnets.

** “% Annual” refers to the percent of the current “sector” harvest/revenue (all species by mesh size and season) relative to the total annual harvests/revenue (all species, all gear, all seasons) by the same individual fishing entities that contributed to the sector total. Since the “universe” of participants at each sector level potentially (likely) differ from that of any other/all other sector levels, these values are not additive. The values indicate the relative importance of harvests at that sector level to total annual harvests by these participants.

Table 9b: Summary statistics by mesh size and season for participants in the Virginia ocean gillnet fishery, 2001 fishing season. These statistics include all ocean harvests, ex-vessel value, and trips by these participants, regardless of the gear used. Ocean waters are assumed to be water body codes 625 and 631 in the Virginia data coding system. Totals and percentages may not sum exactly due to rounding.

Season	Mesh Size	Harvest (lbs)	% Annual**	Ex-vessel Value	% Annual**	Trips
Summer	Large	25,400	2%	\$25,300	3%	72
	Medium	180,200	18%	\$76,900	14%	192
	Small	555,000	13%	\$178,900	9%	382
	Other*	102,800	5%	\$77,100	6%	217
Winter	Large	1,092,400	11%	\$1,625,700	25%	1,174
	Medium	223,200	4%	\$127,600	5%	257
	Small	1,117,700	15%	\$436,200	11%	922
	Other*	58,100	2%	\$60,300	3%	143

* “Other” includes all gear other than gillnets.

** “% Annual” refers to the percent of the current “sector” harvest/revenue (all species by mesh size and season) relative to the total annual harvests/revenue (all species, all gear, all seasons) by the same individual fishing entities that contributed to the sector total. Since the “universe” of participants at each sector level potentially (likely) differ from that of any other/all other sector levels, these values are not additive. The values indicate the relative importance of harvests at that sector level to total annual harvests by these participants.

Table 9c: Summary statistics by mesh size and season for participants in the southern Virginia ocean gillnet fishery, 2001 fishing season. These statistics include all ocean harvests, ex-vessel value, and trips by these participants, regardless of the gear used. Southern Virginia ocean waters are assumed to be water body code 631 in the Virginia data coding system. Totals and percentages may not sum exactly due to rounding.

Season	Mesh Size	Harvest (lbs)	% Annual**	Ex-vessel Value	% Annual**	Trips
Summer	Large	8,300	2%	\$18,300	6%	31
	Medium	400	0%	\$700	1%	10
	Small	123,900	5%	\$44,000	3%	111
	Other*	64,300	5%	\$36,400	4%	128
Winter	Large	951,400	12%	\$1,427,400	28%	975
	Medium	23,400	1%	\$16,200	1%	68
	Small	859,900	16%	\$324,700	10%	698
	Other*	30,900	1%	\$30,200	2%	75

* “Other” includes all gear other than gillnets.

** “% Annual” refers to the percent of the current “sector” harvest/revenue (all species by mesh size and season) relative to the total annual harvests/revenue (all species, all gear, all seasons) by the same individual fishing entities that contributed to the sector total. Since the “universe” of participants at each sector level potentially (likely) differ from that of any other/all other sector levels, these values are not additive. The values indicate the relative importance of harvests at that sector level to total annual harvests by these participants.

Table 10: Summary statistics by season for participants in the North Carolina gillnet (sink, drift or float) fishery, 2001 fishing season. These statistics include all harvests, ex-vessel value, and trips by these participants, regardless of the gear used or water body fished. Totals and percentages may not sum exactly due to rounding.

Season	Harvest (lbs)	% Annual	Ex-vessel Value	% Annual	Trips	% Annual	Fishers*
Summer	56,200,000	68%	\$59,300,000	77%	88,900	66%	1,828
Winter	26,900,000	32%	\$17,800,000	23%	44,800	34%	1,720
Annual	83,100,000		\$77,100,000		133,700		2,077

*Not additive.

Table 11: Summary statistics by mesh size for participants in the North Carolina gillnet (sink, drift or float) fishery, 2001 fishing season. These statistics include all harvests, ex-vessel value, and trips by these participants, regardless of the gear used or water body fished. A “% Annual” value of “0%” should be interpreted as “less than 1%.” Totals and percentages may not sum exactly due to rounding.

Mesh Size	Harvest (lbs)	% Annual	Ex-vessel Value	% Annual	Trips	% Annual	Fishers**
Large	200,000	0%	\$300,000	0%	1,900	1%	476
Medium	10,000,000	12%	\$13,800,000	18%	25,700	19%	1,321
Small	19,800,000	24%	\$7,700,000	10%	16,100	12%	1,188
Other*	53,100,000	64%	\$55,300,000	72%	90,000	67%	1,738
Annual	83,100,000		\$77,100,000		133,700		2,077

* “Other” includes all gear other than gillnets.

**Not additive.

Table 12a: Summary statistics by mesh size and season for participants in the North Carolina ocean gillnet (sink, drift or float) fishery (ocean waters 0-3 miles), landed north of Cape Lookout, 2001 fishing season. These statistics include all harvests, ex-vessel value, and trips by these participants, regardless of the gear used. Totals and percentages may not sum exactly due to rounding.

Season	Mesh Size	Harvest (lbs)	% Annual**	Ex-vessel Value	% Annual**	Trips
Summer	Large	400	0%	\$100	0%	2
	Medium	133,700	0%	\$101,600	0%	140
	Small	1,320,400	6%	\$959,300	5%	939
	Other*	40,500	0%	\$31,500	0%	98
Winter	Large	163,000	1%	\$194,400	1%	651
	Medium	486,900	1%	\$283,400	1%	154
	Small	6,480,000	14%	\$2,284,800	6%	1,709
	Other*	156,900	0%	\$186,200	0%	222

* “Other” includes all gear other than gillnets.

** “% Annual” refers to the percent of the current “sector” harvest/revenue (all species by mesh size and season) relative to the total annual harvests/revenue (all species, all gear, all seasons) by the same individual fishing entities that contributed to the sector total. Since the “universe” of

participants at each sector level potentially (likely) differ from that of any other/all other sector levels, these values are not additive. The values indicate the relative importance of harvests at that sector level to total annual harvests by these participants. A “% Annual” value of “0%” should be interpreted as “less than 1%.”

Table 12b: Summary statistics by mesh size and season for participants in the North Carolina ocean gillnet (sink, drift or float) fishery (ocean waters 0-3 miles), landed in Cape Lookout and south, 2001 fishing season. These statistics include all harvests, ex-vessel value, and trips by these participants, regardless of the gear used. Totals and percentages may not sum exactly due to rounding.

Season	Mesh Size	Harvest (lbs)	% Annual**	Ex-vessel Value	% Annual**	Trips
Summer	Large	-	-	-	-	-
	Medium	23,300	0%	\$15,700	0%	50
	Small	688,900	10%	\$335,100	5%	724
	Other*	392,400	3%	\$547,200	4%	669
Winter	Large	13,100	2%	\$14,900	2%	36
	Medium	21,500	0%	\$11,400	0%	54
	Small	1,193,800	17%	\$572,400	9%	1,260
	Other*	175,600	1%	\$250,200	2%	238

* “Other” includes all gear other than gillnets.

** “% Annual” refers to the percent of the current “sector” harvest/revenue (all species by mesh size and season) relative to the total annual harvests/revenue (all species, all gear, all seasons) by the same individual fishing entities that contributed to the sector total. Since the “universe” of participants at each sector level potentially (likely) differ from that of any other/all other sector levels, these values are not additive. The values indicate the relative importance of harvests at that sector level to total annual harvests by these participants. A “% Annual” value of “0%” should be interpreted as “less than 1%.”

Table 13: Summary statistics by season for participants in the North Carolina through New Jersey gillnet fishery, 2001 fishing season. These statistics include all harvests, ex-vessel value, and trips by these participants, regardless of the gear used. Totals and percentages may not sum exactly due to rounding.

Season	Harvest (lbs)	% Annual	Ex-vessel Value	% Annual	Trips	% Annual	Fishers*
Delaware-Maryland-New Jersey							
Summer	2,000,000	63%	\$1,100,000	58%	1,600	70%	23
Winter	1,200,000	37%	\$800,000	42%	700	30%	23
Annual	3,200,000		\$1,900,000		2,300		23
Virginia							
Summer	21,200,000	73%	\$13,100,000	68%	48,000	75%	843
Winter	7,800,000	27%	\$6,100,000	32%	15,900	25%	770
Annual	29,000,000		\$19,200,000		63,800		979
North Carolina							
Summer	56,200,000	68%	\$59,300,000	77%	88,900	66%	1,828
Winter	26,900,000	32%	\$17,800,000	23%	44,800	34%	1,720
Annual	83,100,000		\$77,100,000		133,700		2,077
All							
Summer	79,400,000	69%	\$73,500,000	75%	138,500	69%	2,694
Winter	35,900,000	31%	\$24,700,000	25%	61,400	31%	2,513
Annual	115,300,000		\$98,200,000		199,900		3,079

*Not additive.

Table 14: Summary statistics by mesh size for participants in the North Carolina through New Jersey gillnet fishery, 2001 fishing season. These statistics include all harvests, ex-vessel value, and trips by these participants, regardless of the gear used. A “% Annual” value of “0%” should be interpreted as “less than 1%.” Totals and percentages may not sum exactly due to rounding.

Mesh Size	Harvest (lbs)	% Annual	Ex-vessel Value	% Annual	Trips	% Annual	Fishers**
Delaware-Maryland-New Jersey							
Large	1,200,000	38%	\$1,000,000	53%	700	31%	18
Medium	100,000	3%	\$100,000	5%	100	4%	15
Small	1,600,000	50%	\$600,000	32%	1,100	49%	22
Other*	300,000	9%	\$200,000	11%	400	16%	22
Annual	3,200,000		\$1,900,000		2,300		23
Virginia							
Large	1,900,000	7%	\$2,800,000	15%	4,300	7%	396
Medium	600,000	2%	\$300,000	2%	800	1%	96
Small	13,700,000	47%	\$4,500,000	23%	11,900	19%	456
Other*	12,900,000	44%	\$11,700,000	61%	46,900	74%	800
Annual	29,000,000		\$19,200,000		63,800		979
North Carolina							
Large	200,000	0%	\$300,000	0%	1,900	1%	476
Medium	10,000,000	12%	\$13,800,000	18%	25,700	19%	1,321
Small	19,800,000	24%	\$7,700,000	10%	16,100	12%	1,188
Other*	53,100,000	64%	\$55,300,000	72%	90,000	67%	1,738
Annual	83,100,000		\$77,100,000		133,700		2,077
All							
Large	3,300,000	3%	\$4,100,000	4%	6,900	3%	890

Medium	10,700,000	9%	\$14,200,000	14%	26,600	13%	1,432
Small	35,100,000	30%	\$12,800,000	13%	29,100	15%	1,666
Other*	66,300,000	58%	\$67,200,000	68%	137,300	69%	2,560
Annual	115,300,000		\$98,200,000		199,900		3,079

* “Other” includes all gear other than gillnets.

**Not additive.

3.3.2 Fishing Practices

Fisheries affected by this action will include the North Carolina Inshore Gillnet, Southeast Atlantic Gillnet, Southeastern U.S. Atlantic Shark Gillnet, U.S. mid-Atlantic Coastal Gillnet, Atlantic Blue Crab Pot/Trap, mid-Atlantic Haul/Beach Seine, North Carolina Long Haul Seine, North Carolina Roe Mullet Stop Net, and Virginia Pound Net. The 2004 List of Fisheries (LOF) listed these 9 fisheries as Category I or II based on their interactions with the coastal morphotype of bottlenose dolphin (*Tursiops truncatus*). These fisheries are described by each state affected by the LOF because seasonality of fishing, fishing practices, and regulations differ among states. These fisheries are located throughout the inshore (estuarine waters or landward of the 72 COLREGS (International Regulations for Preventing Collisions at Sea 1972)), nearshore (State jurisdiction, ≤ 3 nautical miles from the ocean shore), and offshore (federal jurisdiction, > 3 nautical miles from the ocean shore)) waters. These definitions will be used throughout the text to describe fishing locations and regulations. Although recreational fisheries are not included in the LOF and NMFS currently has very limited jurisdiction over recreational fisheries via the take reduction process under the MMPA, some recreational fishing practices are similar to commercial activities; hence, these activities are included in this EA when information is available. Additionally, the recreational fishing sector was represented on the BDTRT.

The terms used among states for fishing gear and fishing practices are often times variable. Regarding crab fishing and unless described differently, the term “crab pot” refers to a cubical wire trap that is typically 2 feet x 2 feet x 2 feet (0.6 m x 0.6m x 0.6 m) and has entrance tunnels that allow crabs to enter, but not escape. The location of the pot is marked by a float or buoy, which is attached with line that may be floating, sinking, or neutrally buoyant. Mesh-size categories for net fisheries, unless noted otherwise, will be the following: small mesh (less than or equal to 5 inch (12.7 cm) stretch mesh); medium mesh (greater than 5 inch (12.7 cm) to less than 7 inch (17.8 cm) stretch mesh; and large mesh (greater than or equal to 7 inch (17.8 cm) stretch mesh.

3.3.2.1 New Jersey

3.3.2.1.1 Gillnet Fishery

Commercial

Gillnets operating in ocean waters west of 72° 30'W off New Jersey are part of the Category I U.S. Mid-Atlantic Coastal Gillnet Fishery. Gillnets are also used in the Delaware Bay and its tributaries, and Raritan and Sandy Hook Bays; however, they are considered to be part of the Category III Delaware Bay inshore gillnet fishery. New Jersey coastal gillnets may be anchored, drifted, or attached to stakes. Staked nets are used primarily for menhaden. All nets must be marked according to state regulations and fishers must obtain a license for the number of nets they use. There are between 5,000 and 6,000 gillnet licenses sold each year (New Jersey Bureau of Marine Fisheries (NJBMF)).

Under New Jersey state law, staked and anchored gillnets in the ocean must be tended at night from 15 June through 31 October, meaning that the operator must be within 1500 feet (457.2 m) of the nearest portion of the net.

Small-mesh nets are used in the ocean to target Atlantic croaker, Atlantic mackerel, and an assemblage of butterfish, white perch, spot, and northern kingfish. Menhaden is harvested often as bycatch in these fisheries. Mesh size is typically between 3 and 4 inches (7.6 – 10.2 cm) for Atlantic croaker and the assemblage. Anchored nets are used for Atlantic mackerel and stab nets are used to target croaker and the assemblage. Landings of Atlantic mackerel are primarily in the winter; however, some landings still occur in May. Landings of other species are greatest in August and September. Most of the effort is within 3 nmi (5.6 km) of shore with the exception of Atlantic mackerel, which is primarily in federal waters.

Nets used in the ocean during the summer to harvest bonito, bluefish, and weakfish can have either small or medium mesh. Bonito are harvested 3-15 nmi (5.6 – 27.8 km) from shore with drift nets that are 1,200 to 2,400 feet (365.8 – 731.5 m) long. Landings are greatest in July and August. Bluefish are sometimes mixed with bonito; however, bluefish are targeted separately with landings greatest in June and October. Fishers use anchored, stab, and drift nets in waters from just off the beach to 15 nmi from shore. Net lengths range from 300 to 2,400 feet (91.4 – 731.5 m). Weakfish are harvested with anchored or stab nets in waters from just off the beach to 12 nmi (22.2 km) from shore. Net length is usually 1,200 feet (365.8 m). The season for weakfish ends May 21 and resumes again at the beginning of September.

Other species targeted with medium-mesh nets are smooth dogfish and shad. For smooth dogfish, fishers use 3,000-6,000 feet (914.4 – 1,828.8 m) of anchored net in waters from 3 to 20 nmi (5.6 – 37.0 km) from shore. Landings are greatest in October, but occur throughout the summer. Most of the shad landings occur before the summer season; however, some landings occur in May. Gear characteristics of shad nets are similar to inshore nets and most of the landings come within 3 nmi (5.6 km) of shore.

Large-mesh nets are used in the ocean to catch black drum, monkfish, sharks, and skates. Gear characteristics and season in the ocean fishery for black drum are similar to the inshore fishery. Fishers use both stab and drift nets within 12 nmi (22.2 km) of shore. Effort for monkfish,

sharks, and skates occurs outside of state waters, as far out as 50 nmi (92.6 km). Monkfish are harvested in May, June, and July with anchored nets that have a mesh size of 10-12 inches (25.4 – 30.5 cm) and a length from 4,000 to 5,000 feet (1,219.2 – 1,524.0 m). There are only 6-8 boats that fish for monkfish during most of the summer. Fishers use similar gear to harvest skates in May and June. There is little effort for sharks with a peak in landings during July. Nets typically have a mesh size of 9 to 13 inches (22.8 – 33.0 cm), a length of 1500 to 3000 feet (457.2 – 914.4 m), and a twine size of 1.05 to 1.3 mm.

In Delaware Bay, anchored gillnets must be tended at night from 15 June through 30 September, meaning that the operator must be within 1500 feet (457.2 m) from the nearest portion of the net.

Small-mesh nets are used in Delaware Bay during the summer to harvest Atlantic croaker, menhaden, weakfish, and an assemblage of butterfish, white perch, spot, and Northern kingfish. Mesh sizes can be as small as 3 inches (7.6 cm) for the assemblage and as large as 5.5 inches (14.0 cm; spilling over into the medium-mesh category) for weakfish. Nets are typically 1200 feet (365.8 m) in length; however, they can be as short as 180 feet (54.9 m) for menhaden. Atlantic croaker landings peak in September; menhaden are harvested mostly in May through August; weakfish landings peak in September and October; and landings of the assemblage of butterfish, white perch, spot, and northern kingfish peak in August and September.

Smooth dogfish and shad are harvested with medium-mesh gillnets in Delaware Bay in the summer. Most of the shad landings occur in April, before the summer, but some landings still occur in May. Shad nets have a mesh size of 5 to 6 inches (12.7 - 15.2 cm) and can be drifted, staked, or anchored. Net lengths range from 180 to 1200 feet (54.9- 365.8 m). There is a low amount of effort for smooth dogfish throughout the summer with landings greatest in July and October. The mesh size ranges from 5.5 to 6.25 inches (14.0 -15.9 cm), with a heavier twine size than shad nets (0.62 - 0.90 mm. versus 0.28-0.47 mm). Nets are typically 1200 feet (365.8) in length and can be anchored or staked.

The only large-mesh fishery in Delaware Bay is for black drum. Landings are greatest in May, June, and July. These nets have a mesh size of 12 to 15 inches (30.5 – 38.1 cm) with a heavy twine size of 1.05 mm. Net lengths are between 1200 and 2400 feet (365.8 – 731.5 m). Some fishers use anchored nets, which sometimes soak overnight, while other fishers use stab nets. Stab nets are similar to the fishing practice called drop-netting in North Carolina. Nets are set in an area where fish were marked on an echosounder; the nets may soak for 1 to 12 hours. Sharks are harvested as bycatch in this fishery.

Recreational

Recreational gillnets are not allowed.

3.3.2.1.2 Atlantic Blue Crab Pot/Trap Fishery

Commercial

Commercial fishers must obtain a license to use crab pots and there is limited entry to this fishery. There are approximately 345 commercial crab pot license holders. The season for the crab pot fishery extends from 16 April through 14 December in the Delaware Bay and tributaries and from 15 March through 30 November in other waters. The number of active pots peaks from June to September. Some waters are closed to crab pots all year. All crab pots must be marked according to New Jersey regulations and fished every 72 hours. Floating lines are not allowed on any crab pot or crab-pot buoy. Each licensed fisher is allowed to set up to 600 pots in the Delaware Bay and up to 400 crab pots in all other waters.

Recreational

New Jersey Division of Fish and Wildlife allows recreational fishers to use manually operated collapsible traps without a license. Traditional crab pots; however, can only be used with the purchase of a non-commercial crab pot license. The license allows the fisher to set two crab pots. There are approximately 5,387 non-commercial crab pot license holders. Recreational users must abide by the same seasonal closures and gear regulations as commercial fishers.

3.3.2.1.3 Mid-Atlantic Haul/Beach Seine Fishery

Commercial

Haul/Beach seines are allowed from 1 November to 30 April in inland marine waters, bays, coves, rivers and creeks except Lake Takanassee, Spring Lake, Wreck Pond, and Deal Lake. These multifilament nets target white perch. According to New Jersey regulations, seines must have a mesh size of greater than or equal to 2.75 inches (7.0 cm) and a length less than or equal 420 feet (128.0 m), whether singly or in series. Fishers must adhere to New Jersey general gear marking requirements and pay a license fee per net. There is no ocean haul seine fishery (Bill Figley, NJBMF, pers. comm.).

Recreational

Recreational haul/beach seines are not allowed.

3.3.2.2 Delaware

3.3.2.2.1 Gillnet Fishery

Commercial

Gillnets operated in ocean waters west of 72° 30'W off Delaware are part of the Category I fishery, U.S. Mid-Atlantic Coastal Gillnet Fishery. Gillnets are also used in the Delaware Bay; however, they are not a part of this Category I fishery. The commercial gillnet fishery was closed to new entrants in 1984. In 2002, 108 gillnet permits were issued (Delaware Department of Natural Resources and Environmental Control (DNREC) 2002). Some of the most important gillnet regulations from the perspective of potential interactions with bottlenose dolphins are the following: (1) gear must be tended at least once every 48 hours; (2) anchors, floats, and ropes must be removed within 14 days after net removal; (3) fishers are prohibited to fish a single net exceeding 600 feet (182.9 m) or a continuous series of nets exceeding 1,500 feet (457.2 m) in

length; (4) drift gillnets are prohibited for 35 non-continuous days from May and June; and (5) mesh size must be equal to or greater than 3.13 inches (8.0 cm) from 1 April to 30 June. The gillnet fishery accounted for 75 percent of commercial landings in 2002. Commercial fishers are allowed to use anchored and drift gillnets. Mesh sizes are typically in the small or medium mesh category. Gillnet activity occurs in the Delaware Bay, and in state and federal ocean waters. In 2002, landings from federal waters accounted for only 7.9 percent of the total and 43 percent of the total ocean gillnet landings.

Landings from anchored nets accounted for 62.4 percent of total gillnet landings for 2002. Out of these landings, 29.7 percent came from the Atlantic Ocean and 64.9 percent came from Delaware Bay. Landings from the ocean occur mostly from February to April; landings from the Bay occur from January to May and October to December with over 88 percent occurring in March and April. Primary species landed are American shad, weakfish, striped bass, white perch, and Atlantic menhaden.

Landings from drift nets accounted for 37.6 percent of gillnet landings for 2002. Landings from the drift-net fishery were primarily within Delaware Bay (64 percent), particularly in May and June (54 percent). Drift-net landings in the ocean occurred in December. Primary species landed were weakfish, white perch, bluefish, Atlantic menhaden, and striped bass.

The quota for striped bass in Delaware is currently 173,693 lbs. There are two seasons: one from 1 March to 30 April and one from 15 November to 31 December. The winter season is open only if there is quota remaining after the spring season. The majority of landings occur with anchored nets (87.7 percent of gillnet landings for striped bass); however, some drift netting (12.3 percent) does occur. Both gear types have a mesh size of 5 to 7 inches (12.7 – 17.8 cm). Effort is predominately in the Delaware Bay (86.5 percent), but also occurs in the Atlantic Ocean (5.8 percent).

Recreational

The DNREC allows the recreational use of gillnets in tidal waters including tidal creeks. Recreational gillnetting is open to new participants annually. In 2001, 517 permits were issued and 245 permit holders were known to have participated in the fishery. There are many regulations regarding the use of recreational gillnets. Some of the most important regulations from the perspective of potential interactions with bottlenose dolphins are the following: (1) gillnets must be equal to or less than 200 feet (61.0 m) in length; (2) no drift gillnets can be used; (3) no gillnet can be left unattended for more than 48 hours; (4) gillnets with a mesh size less than 3.25 inches (8.3 cm) can not be used in the Delaware River and Bay or the ocean; (5) gillnets can not be used in the ocean or Delaware Bay within 0.5 nmi (0.9 km) of the beach to the south of RD #16 where it terminates in Broadkill Beach from 1 May through 30 November; (6) gillnets can not be used in the ocean within 1 nmi (1.9 km) radius of the mouth of Indian River Inlet or in Indian River Bay within 0.5 nmi (0.9 km) radius of the mouth of Indian River Inlet. Primary species landed are American menhaden, white perch, weakfish, bluefish, and spot. In 2001, 20 percent of landings with recreational gillnets were from the Delaware Bay. The

majority of the recreational landings occurred in the inland bays (52 percent) and tidal creeks (25 percent). No landings occurred in the ocean.

3.3.2.2.2 Atlantic Blue Crab Pot/Trap Fishery

Commercial

The commercial crab-pot fishery is a limited-entry fishery (DNREC 2000). In 2000, 212 commercial crab-pot licenses were sold. A commercial crab fisherman can fish a maximum of 200 pots. The fishermen's identification information must be inscribed on the buoy. There are many regulations regarding the use of commercial crab pots. Some of the most important regulations from the perspective of potential interactions with bottlenose dolphins are the following: (1) commercial crab pots are allowed only in the tidal waters of Delaware River, Delaware Bay, and in Roy's Creek to the south of Fenwick Ditch; (2) crab pots must be removed from all waters from 1 December through the last date in February; and (3) crab pots must be fished at least once in a 72-hour period.

Recreational

Recreational crab fishermen do not have to obtain a license or permit. They are limited to two crab pots. Each pot must be attached to a buoy that has the fisher's identification information inscribed on it. Similar to commercial crab fishermen, recreational crab fishermen must remove all crab pots between and including 1 December and the last date in February, and pots must be fished at least once every 72 hours. Recreational pots may be set in tidal creeks and rivers as well as all tidal waters of the state (Delaware Bay, Delaware River, and the Inland Bays). There is no limit on the number or size of crab traps used by recreational fishers. A trap is defined by DNREC as a wire frame covered with webbing of wire or netting that is activated to enclose crabs when they are attracted to bait placed in the trap. It requires attendance to catch crabs.

3.3.2.2.3 Mid-Atlantic Haul/Beach Seine Fishery

Commercial

The haul/beach seine fishery in Delaware is not a limited-entry fishery. Haul seines may have any mesh size and be made of any material; however, seines greater than 300 feet (91.4 m) in length require a permit. In 2002, there were 17 permits issued for commercial haul seines greater than 300 feet (91.4 m). DENREC defines a "common haul seine" as an encircling type of net that is 300 feet (91.4 m) or more in length and consists of 2 wings and a bunt or bag. The top line has floats to keep it at the surface while the bottom line is weighted. The bunt or bag is flanked by wings, which have lines attached for pulling in the net. It may be set by vessel and hauled to shore by hand or winch. Seines used in Delaware are typically deployed and retrieved manually, have multifilament webbing, and mesh sizes between 2.0 and 2.5 inches (5.1 – 6.4 cm). Soak time is generally short, lasting only as long as it takes to wrap the net around the fish. There was some effort in the past in the Delaware Bay; however, in 2001 all effort occurred in the Delaware River, with carp comprising 100 percent of the catch.

Recreational

There is no recreational license for the use of haul seines. Haul seines were used in the past to catch baitfish in salt waters. Similar to commercial fishers, recreational fishers must obtain a permit to use a seine greater than 300 feet (91.4 m). DEREK does not have data on the recreational use of haul seines; however, no permits for 300-foot (91.4-m) seines were issued in 2002.

3.3.2.3 Maryland

3.3.2.3.1 Gillnet Fishery

Commercial

Gillnets operated in ocean waters west of 72° 30'W off Maryland are part of the Category I U.S. Mid-Atlantic Coastal Gillnet Fishery. Gillnets are also used in the Chesapeake Bay and its tributaries; however, they are not a part of this Category I fishery. There is limited entry to the commercial gillnet fishery. Out of 2,299 fishers licensed to use gillnets in 2002, 382 people reported using gillnets.

Commercial - Ocean

Most fishers using gillnets in the ocean during the summer use small-mesh gillnets (3 - 3.5 inches (7.6 – 8.9 cm)) to harvest spot, Atlantic croaker, weakfish, menhaden, bluefish, and spotted seatrout. Nets range from 300 to 3000 feet (91.4 – 914.4 m) in length and may be drifted or anchored. The majority of effort is in state waters. Net depths are 10 to 20 feet (3.0 – 6.1 m). Spot and croaker are harvested throughout the summer with a peak in landings in July and August for spot and in October for croaker. The season for weakfish in the ocean usually runs from mid-March through April only. The majority of menhaden landings peak in the winter with about 25 percent of total landings throughout the summer.

Spiny dogfish were traditionally harvested from December to May with a peak in landings in March, before the summer season. During the directed fishery, nets were anchored and had a mesh size of 5 to 7 inches (12.7 – 17.8 cm). Nets were 300 to 3,000 feet (91.4 – 914.4 m) long with a net depth of 10 to 15 feet (25.4 – 38.1 cm). The greatest amount of effort occurred outside of 12 nmi (22.2 km). The federal FMP (Fishery Management Plan) for spiny dogfish was implemented in 2000 and reduced the quota and trip limit to levels that will allow this to be a bycatch fishery only. The reduction in landings is apparent when comparing the 383,192 pounds landed in 1999 to the 1,739 pounds landed in 2002.

Monkfish are harvested from December to May, but landings peak in April, before the summer season. Gillnets have a mesh size of 10 to 12 inches (25.4 – 30.5 cm). Fishers set 300 to 3,000 feet (91.4 – 914.4 m) of anchored net and use tie-downs, resulting in a net height of 3 to 6 feet (0.9 – 1.8 m). Effort is outside of state waters, particularly outside of 12 nmi (22.2 km) from shore. Landings in 2002 were 107,532 pounds, down from 151,984 in 1999 due, in part, to regulations outlined in the federal FMP that was implemented in November 1999.

Gillnets - Chesapeake Bay

Single-strand monofilament gillnets were prohibited in Maryland's portion of Chesapeake Bay since 1963 (Uphoff et al. 1995). They are legal, however, in Maryland's ocean waters and in adjacent Bay jurisdictions (Virginia and Potomac Rivers). Because of the restrictions, gillnetters were using nylon multifilament nets. Since 1992, multiple-strand, monofilament nets have appeared in Maryland's Chesapeake Bay in the summer (June – September) gillnet fisheries. Gillnets used inside the Bay range from 2400 to 8400 feet (731.5 – 2560.3 m) in length and have a mesh size of 2.5 to 3.5 inches (6.4 – 8.9 cm). The primary species landed inside the Bay during the summer are Atlantic croaker, spot, weakfish, bluefish, and menhaden. Because of the significant increase in Atlantic croaker landings in 1995, emergency regulations took effect in July of that year. These regulations limited the number of gillnetters and the length of gillnets, and placed restrictions on the areas, days of the week, and time gillnetting could occur. The season for weakfish in the Bay also is very restricted, usually extending from August through September only.

Recreational

The recreational use of gillnets is not permitted by Maryland Department of Natural Resources.

3.3.2.3.2 Atlantic Blue Crab Pot/Trap Fishery

Commercial

The blue crab fishery is the most valuable commercial fishery in Maryland, with the majority of commercial landings coming from the “Chesapeake” style crab pots of two-foot (0.6 m) square dimensions (versus collapsible traps, trotlines, dip nets, etc.). In Maryland, a crab trap is a one-foot (0.3 m) square collapsible trap made of wire mesh with a line attached to the top of the trap. When there is no tension on the line, the sides (doors) of the trap open out. The trap is baited with fish or poultry. Soak times are short and the traps are usually tended.

The fishery takes place primarily in the Chesapeake Bay, but also in coastal bays. Maryland has regulated this fishery by shortening the crabbing season to 1 April to 15 December, forcing fishers to take one day off each week, limiting the number of pots per fisher, and placing a freeze on new licenses. There are currently 6,086 licensed crab-pot fishers, not all of whom actively crab with any type of gear. Crabbers may fish a maximum of 900 pots with appropriate licensing and an unlimited number of traps. Currently, only 410 fishers are licensed to fish the maximum number of pots. The greatest number of pots are fished from June through September and the number of pots in the water on any given day may be as many as 200,000 (Speir 2000). In 2002, commercial landings of blue crabs totaled 25,010,982 pounds.

Recreational

In 1999, 29,795 recreational crabbing licenses were issued under new licensing requirements (Speir 2000). That number of licenses increased to 38,455 in 2002. Actual participation in the recreational fishery and their catch are not well documented; reporting is not required. The

fishery takes place in the Chesapeake Bay and coastal bays. Much of the recreational effort outside of the Chesapeake Bay is centered in the two northernmost coastal bays, the Isle of Wight and Assawoman. This small-boat fishery uses collapsible traps (11-30 traps with a license; up to 10 without a license), which have short soak times. The only recreational crab fishermen who are allowed to use pots are waterfront landowners. They may use two traditional crab pots attached to their pier or within 300 feet of the shoreline of their property.

3.3.2.3.3 Mid-Atlantic Haul/Beach Seine Fishery

Commercial

The haul/beach seine fishery in Maryland occurs only in internal waters and targets primarily white perch and striped bass. Haul seines have one end attached to the beach and a boat is used to wrap the net around the fish. All commercial fishers with a finfish license are allowed to use haul seines. In 2002; however, only nine reported using haul seines. The season for striped bass generally occurs from June to November, with the majority of landings occurring from August to November. There is a daily allocation of pounds of striped bass per day and a seasonal allocation per person. There are no seasonal restrictions on white perch. Soak times generally are only as long as it takes to deploy the net around a school of fish. Seines are typically 1600-1800 feet in length with multifilament webbing of 2.5 to 4 inches (6.4 – 10.2 cm) mesh. Most haul seines are used in the Susquehanna Flats at the head of the Chesapeake Bay.

Recreational

The recreational use of haul seines is not permitted by Maryland Department of Natural Resources.

3.3.2.4 Virginia

3.3.2.4.1 Gillnet Fishery

Commercial

Gillnets operated in ocean waters west of 72° 30'W off Maryland are part of the Category I fishery, U.S. Mid-Atlantic Coastal Gillnet Fishery. Gillnets are also used in the Chesapeake Bay and its tributaries; however, they are not a part of this Category I fishery.

Recreational

Recreational fishers may purchase a license to use one gillnet that is limited to 300 feet in length and must be tended within 300 feet. In 2002, 673 non-commercial licenses were sold for gillnetting, down from 745 in 2001. Laws and regulations that apply to commercial gillnets also apply to recreational gillnets; however, recreational gillnet fishermen must abide by recreational bag limits. Recreational gillnets may not be used to catch and retain any fish species regulated by an annual harvest quota including black drum, black sea bass, bluefish, scup, speckled trout, striped bass, and summer flounder. In the early spring, recreational gillnet fishermen fish in the river systems for herring, white perch, catfish, and gizzard shad. Recreational gillnets are also

used in the summer and fall to catch spot, croaker, bluefish, sea trout, menhaden, and striped mullet. Much of the catch is comprised of juvenile/small fishes used for baiting crab pots.

3.3.2.4.2 Atlantic Blue Crab-Pot Fishery

Commercial

In 2001, VMRC instituted a state moratorium on the sale of new commercial crab-gear licenses. This moratorium ends on 26 May 2004. In 2002, 2,670 crab-pot licenses were issued including 1,736 hard-crab pots and 934 peeler pots (pots targeting soft-shell crabs). Commercial crabbers may set up to 100, 150, 200, 300, or 500 pots depending on the license they obtain.

The crabbing season begins on 1 April and extends through 30 November. Crab pots must be removed from the water on Sundays, except for peeler pots. Pot buoys must be marked with the identification number of the fisher. Although floating line is not prohibited in Virginia waters, most crabbers use sinking lines to keep them from being cut by boat props.

The density of crab pots is greatest in Chesapeake Bay. Crab pots are also used in inshore waters of the eastern shore. Peeler pots are used further up river systems.

Recreational

Any recreational fisher, including those from other states, can set 2 crab pots without a license. To set more than two; however, individuals must purchase a recreational license. In 2002, 545 licenses were issued. This license allows up to 5 pots to be set. Many of the recreational crabbers are owners of waterfront property who tie crab pots to their docks. Recreational crabbers must abide by the same season, time/area regulations, and other laws regulating commercial crabbers.

3.3.2.4.3 Haul/Beach-Seine Fishery

Commercial

Haul/beach seines in Virginia are set from the shore along inshore waters. One end of the multifilament seine is stationary, usually staked on the beach, while the seine is set from a motorboat or rowboat and hauled to the beach by hand or a power winch. The net consists of two wings (typically 3-inch stretched mesh) and a smaller mesh bunt or bag (typical stretched-mesh size of 1 to 2 inches). The maximum allowable length of haul seines is 3,000 feet.

In 2002, VMRC sold 45 commercial licenses that allowed fishers to use haul seines greater than 1,500 feet in length and 17 licenses that allowed fishers to use haul seines greater than 1,500 feet in length. Haul-seine harvest is greatest from April through August. Most trips (82.7 percent in 2000) occur in the western Chesapeake tributaries and other mainstem Bay areas. Haul seines are also used in the inshore waters between the eastern shore and barrier islands (7.6 percent trips in 2000) and in the western side of the Chesapeake Bay (8.4 percent in 2000). Haul seines in the

Chesapeake Bay and its tributaries harvest mostly Atlantic croaker, spot, weakfish, bluefish, carp, catfish, and miscellaneous baitfish (e.g. menhaden, small croaker and trout).

Two fishers are allowed to use haul seines to harvest striped bass in the Back Bay National Wildlife Refuge on southern Virginia's ocean coast. When new regulations restricted fishing inside the refuge, these two fishers who lived in the area and traditionally fished there were exempted. They use traditional multifilament haul-seine gear and fish only in December.

Beach/haul seines are not a limited-entry fishery; however, there are few to no new participants each year.

Recreational

The recreational use of haul seines is not permitted by VMRC.

3.3.2.4.4 Pound Net Fishery

Commercial

There is limited entry into the pound net fishery with 180 licenses issued in 2002. Pound nets are set throughout the Chesapeake Bay, with gear found in the main system of the Bay and along the eastern shore of Virginia, around the mouth of and in the York River, and around the mouth of and in the Rappahannock River. Pound nets occur immediately offshore of the Kiptopeke area and along the southern portion of the Virginia eastern shore. Pound net fisheries in the Chesapeake Bay target a variety of baitfish, Atlantic croaker, Atlantic menhaden, Atlantic mackerel, and other fish species. Harvest is greatest from April through October.

The pound net fishery uses fixed gear for live-entrapment of fishes. Pound nets are semi-permanent structures that consist of poles that serve as a framework for mesh nets. The nets are strung between the poles, comprising three sections: (1) a pound, which is the enclosed end of the net where the entrapment takes place; (2) a heart that aids in funneling the fish into the pound; and (3) a leader, which is a long straight net of mesh or stringers. Nets occasionally have a double pound. Pound nets are typically set perpendicular to the shoreline where the leader guides fish swimming along the shore into the heart and pound.

Mesh size varies among different sections of the pound net. The pound itself ranges from 2-4 inches stretch mesh. The mesh on the heart is typically less than eight inches stretch. Large-mesh leaders (8 to 20 inches stretch) are used along the southern portion of the eastern shore to prevent flotsam from getting entangled in the leaders and causing the net to be swept away, which happens in locations with strong tidal currents. In the southern area of the eastern shore, large-mesh leaders (approximately 12 inches stretch) are set in deep water (approximately 20 to 30 feet), while small mesh leaders (approximately 6 to 9 inches stretch) are set closer to shore in up to 10 feet of water. While stringer leaders are not used along the eastern shore, they are found in the western bay, around the tip of Mobjack Bay, and just south of the mouth of the Potomac River, near Reedville. On 17 June 2002, NMFS published an interim final rule to prohibit

leaders with stringers (vertical lines in the leader) and restrict the mesh size of leads to less than 12 inches stretch in pound nets in Virginia waters of the Chesapeake Bay main system from 8 May to 30 June of each year. The proposal is to protect sea turtles and affects 11 fishermen fishing in approximately 24 pound net sites in Virginia waters.

Pound nets are set throughout the Chesapeake Bay, with gear found in the main system of the bay and along the eastern shore of Virginia, around the mouth of and in the York River, and around the mouth of and in the Rappahannock River. Pound nets occur immediately offshore of the Kiptopeke area and along the southern portion of the Virginia eastern shore. Pound net fisheries in the Chesapeake Bay target baitfish, Atlantic croaker, menhaden, Atlantic mackerel and other fish species. Harvest is greatest from April through October.

Recreational

The recreational use of pound nets is not permitted by VMRC.

3.3.2.5 North Carolina

3.3.2.5.1 Gillnet Fishery

Commercial

There is limited entry for all commercial fishing licenses in North Carolina. The Standard Commercial Fishing License is issued annually and authorizes the harvest and selling of fish, shrimp, crab, or any marine species, except menhaden and shellfish. To harvest menhaden and shellfish, fishers must obtain endorsements to their Standard Commercial Fishing License. In 2002, there were 4,541 commercial fishers who reported landings and 1,932 of them reported landings from gillnets (North Carolina Division of Marine Fisheries (NCDMF) 2003a).

There are three categories of gillnets used in North Carolina: set nets, drift nets, and runaround nets (Steve et al. 2001). The predominant type of gillnet used is the set net, which is a stationary net that may be weighted by a heavy lead line, or one or more anchors. The set net category can be further divided into float and sink gillnets. A float gillnet, like the name implies, has the top line (float line) floating on the surface. The sink gillnet has the top line submerged beneath the water. Drift nets are allowed to drift with the current and may be sink or float nets also. The runaround gillnet is used by actively encircling a school of fish. The minimum mesh size for all gillnets in state waters is 2.5 inches (6.4 cm) mesh. Some water bodies require a larger size mesh.

3.3.2.5.1.1 Inshore Gillnet Fishery

This category II fishery includes fishing with any type of gillnet gear inshore of the COLREGS lines in North Carolina. In 2002, there were more than seven times as many gillnet trips inshore (42,089) than in state and federal ocean waters (4,780 and 1,109) combined (NCDMF 2003a). Over 90 percent of gillnets used inshore are set nets, including sink nets (66 percent of all set nets inshore) and float nets (34 percent of all set nets inshore). Runaround gillnets account for

approximately six percent of inshore trips and drift nets account for approximately one percent of inshore trips (Steve et al. 2001).

Sink gillnets are used to target different species depending on the season and location. Landings are greatest for the southern flounder. This fishery extends from April through December with a peak in landings from September through November. The gillnets used to target flounder are typically 5.5 to 6.5 inches (14.0 – 16.5 cm) mesh. Tie-downs are often used in deep waters to create a bag in the net; tie-downs are not typically used in shallow waters, but the nets are often deep enough relative to the water depth that it creates a bag. Nets soak from overnight to three days (Gearhart 2002). Effort is greatest in Pamlico and Albemarle Sounds; however, effort occurs in Core Sound, Croatan Sound, Roanoke Sound, and various rivers. The fishery is highly regulated in Pamlico Sound from 1 September through 15 December due to historical interactions with sea turtles (NCDMF Proclamation M-10-2002). Small-mesh sink nets are also used to harvest weakfish and bluefish. The species are harvested throughout the year, but landings are greatest in April and May (Steve et al. 2001). Spot are also targeted with small-mesh sink nets, particularly south of Cape Lookout. Other species harvested include Atlantic croaker, striped mullet, spotted seatrout, Spanish mackerel, and striped bass.

Float nets are also used inshore. The species harvested are similar to sink gillnets and include southern flounder, striped mullet, spot, spotted seatrout, weakfish, and bluefish. Although much of the effort is in counties surrounding Pamlico and Core Sounds, Onslow County has a high amount of effort also in the summer and late fall.

Runaround gillnets are used predominantly in Pamlico, Core, and Albemarle Sounds; however, some effort does occur in New Hanover and Brunswick Counties. Striped mullet is the primary species targeted; however, other species harvested include spotted seatrout and spot. The fishery extends from June through December, and peaks in October. Once a school is spotted, one end of the net is deployed with a small buoy and weight (less than 3 lbs or 1.4 kg). The weight creates enough drag to pay out the remainder of the net as the fisher encircles the school. The net extends through the entire water column. Net lengths range from 300 to 3000 feet (91.4 – 914.4 m) and mesh sizes are between 3.0 and 4.5 inches (7.6 – 11.4 cm) in northern counties and between 2.63 and 4 inches (6.7 – 10.2 cm) in southern counties. Soak time is generally less than one hour (Steve et al. 2001).

Drift gillnets make up a small percentage of the inshore trips in North Carolina. The fishery occurs primarily in the Carteret County areas of Pamlico and Core Sounds. Small-mesh nets are used to catch striped mullet and spot, and medium-mesh nets are used to catch southern flounder. Landings are greatest in the fall, peaking in October. Approximately 15 percent of the drift gillnet trips occur in New Hanover County. These trips occur in the winter to harvest shad in medium-mesh nets and in the fall to harvest spot in small-mesh nets.

3.3.2.5.1.2 U.S. Mid-Atlantic Coastal Gillnet Fishery

Commercial

The North Carolina portion of this Category I fishery extends west of 72° 30'W and north of a line extending due east from the North Carolina/South Carolina border and south of a line extending due east from the Virginia/North Carolina Border. In 2002, there were 4,780 gillnet trips in state waters and 1,109 gillnet trips in federal waters (NCDMF 2003a). Cape Hatteras is known to be a faunal transition zone and fishing effort often varies north and south of the cape. Effort is greatest south of Cape Hatteras in nearshore waters (within 3 nmi or 5.6 km; state) with the number of trips in 2002 more than four times greater than in nearshore waters north of Cape Hatteras (NCDMF 2003a).

Over 99 percent of gillnet trips and landings in ocean waters off North Carolina occur with set nets, and over 99 percent of those are sink gillnets. Sink nets are often a “string” of several portions called panels or shots, which are tied together and can each range in length from 300 to 1500 feet (91.4 – 457.2 m). Fishers attach a large buoy or a “high flier” or both to one or both ends of the string to mark the location of the net (Steve et al. 2001). Soak times, mesh sizes, net depths, net characteristics (such as tie-downs), and geographic location vary among seasons and target species.

Out of the 5,889 gillnet trips in the ocean during 2002, 81 percent were in state waters (NCDMF 2003a). Nearshore (state waters) trips occur along the entire coast; however, over 50 percent of trips originate out of Dare County (Steve et al. 2001). Even so, less than 20 percent of nearshore gillnet trips occurred north of Cape Hatteras in 2002 (NCDMF 2003a). Other counties that make up the top 99 percent of nearshore gillnet trips include Carteret (16 percent), Brunswick (14 percent), Onslow (8 percent), Hyde (7 percent), and New Hanover (4 percent) (Steve et al. 2001). Effort in the nearshore gillnet fishery varies seasonally among counties. In Dare and Hyde Counties, gillnet effort is greatest from December through April. Target species include bluefish, Atlantic croaker, smooth dogfish, striped bass, and weakfish. Spanish mackerel is the primary species caught in the summer and in the fall. Nearshore gillnet effort in Carteret County peaks from October through February and targets spot, Atlantic croaker, and kingfish in the fall, and targets weakfish and Atlantic croaker in the winter. Spanish mackerel are also targeted in Carteret County from May to October. Nets targeting Spanish mackerel are most often float nets and are set perpendicular to shore with one end just outside of the surf zone. The southern counties (Onslow, New Hanover, and Brunswick) have a peak in effort during the fall (October – November) for spot and in the spring (March-April) for kingfish (Steve et al. 2001).

In the past, spiny dogfish were also targeted in nearshore and offshore waters, particularly from December to April. Effort was significantly reduced after NMFS implemented the federal Fishery Management Plan (FMP) for spiny dogfish in May 2000 (65 FR 1557). The FMP incorporated a severe reduction in quota from federal waters that allows for a bycatch fishery only. In August of 2000, the Atlantic States Marine Fisheries Commission (ASMFC) issued an Emergency Action that required state waters to be closed to the harvest of spiny dogfish when federal waters were closed. The quota is usually met (and sometimes exceeded) before spiny dogfish occur in North Carolina waters. The combination of these factors essentially closed the directed spiny dogfish fishery off North Carolina.

The offshore sink gillnet fishery originates primarily out of Dare County. Target species include bluefish, Atlantic croaker, and weakfish. In the past, spiny dogfish and monkfish were also targeted. Some of the effort for spiny dogfish has shifted into the bluefish fishery. The offshore fishery for bluefish uses small and medium-mesh nets and it is usually operated as a drop-net fishery with relatively short soak times. Effort in the monkfish fishery was greatly affected by an interim final rule that was published in 2002 to protect sea turtles. The rule implemented temperature-dependent rolling closures for gillnets in federal waters with 8-inch (20.3 cm) mesh or greater (67 FR 13098). Through the implementation of these regulations gillnets with mesh sizes greater than 8 inches (20.3 cm) may operate in federal waters off North Carolina from Oregon Inlet (35° 46.0' N) north to Currituck Beach Light (36° 22.5' N) from 15 January through 15 March. The Mid-Atlantic Harbor Porpoise Take Reduction Plan; however, closes both state and federal waters in this area to gillnets with mesh sizes greater than 7 inches (17.8 cm) from 15 February through 15 March. Some effort for monkfish has shifted into state waters since the implementation of the rule. Gear characteristics for effort in state waters has not been documented. Vessels in the traditional offshore fishery deployed thousands of meters of gillnets with tie-downs that soaked from overnight to several days.

Although runaround gillnets have historically been used in inshore waters, some effort has expanded into nearshore waters. Much of the effort is directed at migrating striped mullet that move in and out of inlets during their fall spawning season. The fishery operates similarly to the inshore fishery and gear characteristics are generally the same. Nearshore effort occurs in three counties: Carteret (70 percent), New Hanover (19 percent), and Onslow (11 percent). Landings peak in New Hanover and Onslow Counties earlier (July – September) than Carteret County (October and November). Target species in New Hanover and Onslow Counties also include Spanish mackerel, bluefish, and spot (Steve et al. 2001).

Recreational

Recreational fishers are allowed to use gillnets if they purchase a Recreational Commercial Gear License (RCGL). They must adhere to recreational size and bag limits. An individual license holder may set one gillnet no longer than 300 feet (91.4 m). If there are two or more license holders aboard a vessel, they can set a maximum of 600 feet (182.9 m) of gillnets and possess no more than 600 feet (182.9 m) of gillnet less than 5.5 inches (14.0 cm) and no more than 600 feet (182.9 m) of gillnet 5.5 inches (14.0 cm) or greater. Recreational gillnets must have a hot-pink buoy on each end to distinguish it from a commercial gillnet and must have identification information on one of the buoys. Gillnets with a mesh size less than 5.5 inches (14.0 cm) must be attended within 300 feet (91.4 m) at all times. Gillnets with a mesh size equal to or greater than 5.5 inches (14.0 cm) must be tended from one hour after sunrise to one hour before sunset.

In 2001, there were 9,014 RCGL license holders (NCDMF 2003b). Small-mesh gillnets (defined by NCDMF as less than 5.5 inches or 14.0 cm) were the second most frequently used gear. There were more than 4,000 trips in every month except January and December. The number of trips peaked in September and October, which corresponds to availability of the primary target species for recreational fishers, spot. The greatest amount of participation also occurred during

these months, with 2,329 and 2,545 license holders reporting effort in September and October, respectively. Other species harvested include Atlantic croaker, striped mullet, bluefish, Atlantic menhaden, flounders, spotted seatrout, Spanish mackerel, weakfish, and kingfishes. Most activity occurred in the Neuse River, Intracoastal Waterway of Brunswick and New Hanover Counties, Atlantic Ocean south of Cape Hatteras, and the New River.

Gillnets with mesh sizes greater than 5.5 inches (14.0 cm) are also commonly used by RCGL license holders. In 2001, effort was relatively constant from June through October with the monthly number of trips ranging from 6,267 to 7,388 (NCDMF 2003b). The greatest number of license holders participating in this fishery occurred in September (1,542) and October (1,509). Flounder was the primary species harvested. Other species harvested include bluefish, Atlantic menhaden, red drum, spotted seatrout, and Atlantic croaker. Effort was greatest in the Pamlico Sound and its major tributaries, the Pamlico, Pungo, and Neuse Rivers.

3.3.2.5.2 Atlantic Blue Crab-Pot/Trap Fishery

Commercial

The North Carolina portion of this category II fishery extends west of 72° 30'W and north of a line extending due east from the North Carolina/South Carolina border and south of a line extending due east from the Virginia/North Carolina Border. Trotlines, crab pots, and trawls are used to harvest crabs; however, since 1994, nearly 95 percent of the total hard crab harvest is from crab pots. In North Carolina, crab pots are attached to a float with black, three-strand, twisted polypropylene 5/16 in. (0.8 cm) sinking line. Each float must be marked with identification information. Crab pots must be fished every 7 days and completely removed from the water between 24 January and 7 February.

In 2002, there were 1,535 commercial fishers reporting landings from 96,871 crab-pot trips, including peeler pots (NCDMF 2003a). The number of trips is generally greatest between May and August (Steve et al. 2001). NCDMF estimates that between 1,000,000 and 1,200,000 commercial crab pots are used annually (Steve et al. 2001). Effort is greatest in Pamlico and Albemarle Sounds with approximately 95 percent of trips occurring in the counties that border these sounds (NCDMF 2000). In these areas, commercial fishers often set up to 2,000 pots each. Commercial crabbers elsewhere may set 150 to 200 pots (Steve et al. 2001).

Recreational

Commercial-style pots, collapsible traps, trawls, hand lines, and dip nets are used to harvest crabs by recreational fishers. Each recreational fisher can set one crab pot from a private dock, pier, or shoreline if they own the property or have permission from the property owner. A recreational fisher must obtain a Recreational Commercial Gear License to fish more than one pot (maximum is 5) or to set pots from a vessel. There is no limit to the number of collapsible traps a fisher can use. Crab pots must be fished every seven days and be completely removed from the water between 24 January and 7 February. Recreational crab pots must have identification information on a hot pink buoy.

In 2001, the estimated number of RCGL holders participating in the fishery varied among months with the greatest number (1,842) occurring in July. The NCDMF estimated that 72,942 crab-pot trips were taken in 2001 by RCGL holders. Over 50 percent of these trips occurred in the Newport River, Neuse River, the Intracoastal Waterway of New Hanover and Brunswick Counties, and the Pamlico River. Effort was greatest from June through September (NCDMF 2003b).

3.3.2.5.3 Mid-Atlantic Haul/Beach Seine Fishery

Commercial

The North Carolina portion of this category II fishery includes fishing with a haul/beach seine to target any species in waters west of 72° 30'W and north of a line extending due east from the North Carolina/South Carolina border and south of a line extending due east from the Virginia/North Carolina Border. NMFS further defines the fishery to include seines where one end is secured and seines that may be secured at both ends and hauled up on the beach (*Federal Register* 1999). Haul seines are traditionally used to encircle fish versus entangling them. The gear usually consists of multifilament webbing that has a bunt or bag section along with a wing section. In North Carolina, beach-based fishers use variations of a traditional haul seine, but the landings are reported with the beach seine fishery in North Carolina's Trip Ticket Program.

3.3.2.5.3.1 Beach/Haul Seines, Beach-anchored Gillnets, and Nearshore Gillnets

Beach-based fisheries use both haul/beach seines and beach-anchored gillnets to target nearshore migrating fish. Some beach-based fishers also use dories to fish nearshore gillnets that are anchored, but not attached to the beach (Bowman and Tork 1998). Although nearshore gillnets should theoretically be included in the nearshore gillnet fishery, landings are reported with the haul/beach seine fishery to North Carolina Division of Marine Fisheries (NCDMF). This is due, in part, because fishers work close to the beach and associate themselves with the haul/beach seine fishery. Target species include weakfish, spotted seatrout, bluefish, spot, striped mullet, kingfish, Atlantic croaker, harvestfish, and striped bass. Peaks in effort occur in April and May, September and October, and December.

The nearshore gillnets that are usually reported as beach seines are set directly off the beach in water at least as deep as the net height (Bowman and Tork 1998). These nets are typically anchored on both ends and may be set perpendicular or parallel to the shore. They are not attached to the beach. Peaks and effort and target species are often similar to beach-anchored haul seines and gillnets.

Beach-based fishers often alternate between beach seines and beach-anchored gillnets. Beach seines typically consist of three sections in order from the beach to the terminal end: a wash net, a bunt, and a wing. Each section may or may not be constructed of various mesh sizes and webbing material (monofilament versus multifilament) (Bowman and Tork 1998; Daniels 1998). If webbing material varies, then the wash and wing are constructed of monofilament while the

bunt is constructed of multifilament net (Bowman and Tork 1998). The wash portion ranges from 10 to 20 yards (9-19 m) in length with 2.88 to 3.25 inch (7.32 – 8.26 cm) mesh; the bunt ranges from 25-100 yards (22 - 92 m) in length with 2.88 to 3.25 inch (7.32 – 8.26 cm) mesh; and the wing portion ranges from 300-800 yards (274 – 732 m) in length with 2.88 to 8.5 inches (7.32 – 21.59 cm) mesh. Beach-anchored gillnets consist of three to four 100-yard (92 m) sections with a 2.88 to 11.0 inch (7.32 – 27.9 cm) mesh of monofilament net without a bunt or wash portion. Fishermen choose their gear depending on the target species, size limits, current strength, amount of debris in the water, and personal preference (Bowman and Tork 1998; NEFSC Fisheries Sampling Branch, Woods Hole, MA, unpubl. data).

Despite the differences between these gears, setting and hauling techniques are similar. The gear is fished by crews of 2 to 6 fishers. Both gear types are set using dories launched from the beach. The gear can range in length from 600 to 1,500 feet (183 - 457 m) and is typically set perpendicular to shore in an inverted “J” position. One end of the net is anchored to a staff, which keeps the net straight and open. The opposite end is anchored offshore and has a line attached (warp line) that leads back and is anchored to the beach. Usually the gear soaks for 12 hours and is hauled to the beach at low tide. The wash net and bunt end of the net are first brought close to the shore to prevent escapement of any fish around that end; then a 4WD vehicle uses the warp line to bring the offshore portion to shore. The vehicle has to repeatedly drive as far as possible towards the dunes and then return to the water’s edge to bring the next section of the net up the beach. This continues until the fish are corralled in the smallest portion of the net possible on shore to allow fishers to pick the catch out of the net. (Bowman and Tork 1998).

In North Carolina the haul/beach seine fishery occurs primarily along the northeastern coast, from the North Carolina/Virginia border to Ocracoke Island. The majority of the activity occurs between Duck/Corolla and Hatteras (Bowman and Tork 1998). Over 90 percent of beach trips occur north of Cape Hatteras between March and August compared to over 60 percent of trips in September through February. The fishery peaks in April and May and targets migrating schools of weakfish, spotted seatrout, bluefish, and harvestfish (Steve et al. 2001). There is another peak in the fall (September and October) in Carteret County primarily targeting striped mullet and in Dare County primarily targeting spot. In the winter, there is another peak effort, although short-lived, targeting striped bass.

The haul/beach seine fishery for striped bass in the winter is especially unique. It occurs on specific days in December or January that are specified by NCDMF. Because of the current allocation of quota for striped bass in North Carolina among gear types (gillnets, beach seines, and trawlers), many gillnet fishermen have used the same 8-11 inch (20.3 – 27.9 cm) mesh gear as both a gillnet and a beach seine to capitalize on the quota allocated to beach-seine fishers. The NCDMF has tried to limit this “double-dipping” by stating that during the striped bass season a beach seine is defined as a net set from the beach where the fishing occurs, that one end of the beach seine must be attached to the shore, and that a monofilament net must be no longer than 1,500 feet (457.2 m). These nets are almost exclusively constructed of monofilament with mesh sizes between 8 and 11 inches (20.3 – 27.9 cm). In addition, some fishers attach the net to the

beach with a line that is up to 600 feet (182.9 m) such that the net is fishing more like a nearshore gillnet.

3.3.2.5.3.2 Swipe Net

Commercial

Fishing with swipe nets is a modification of the long haul seine and uses only one boat (DeVries and Ross 1983). It is listed under the haul/beach seine fishery to maintain consistency with other states that do not have the long haul fishery, but actively practice haul/beach seining and use this terminology (Steve et al. 2001). The swipe-net fishery is primarily a winter fishery targeting spotted seatrout (DeVries and Ross 1983). In areas of Pamlico Sound, swipe nets have almost completely replaced long haul seines (Cunningham et al. 1992).

The net or “swiper” is usually one-half the length of the typical long haul seine (e.g. two wing and two back nets [500-600 feet or 152-183 m] with a sweep seine attached to it) (Guthrie et al. 1973). One end of the net is attached to a “footing-up-stake” and the other end is pulled in a wide circle back to the stake. Although total catch is usually less than with the long haul seine, a crew of usually only three is necessary to fish the gear and several hauls can occur in the same day (Guthrie et al. 1973). Because of confidentiality constraints due to a limited number of participants in this fishery, effort data could not be obtained from the NCDMF trip ticket program.

Recreational

Recreational fishers can use a seine less than 30 feet (9.1 m) in length without a license. A RCGL is required for seines 30 feet (9.1 m) or longer. Mechanical methods cannot be used in the operation of a seine. The mesh size must be less than 2.5 inches (6.4 cm) mesh unless shrimp are being harvested. Then the minimum mesh size is 1.25 inches (3.8 cm) mesh. In 2001, there were an estimated 2,596 seine trips with effort greatest from June through October. Primary target species were spot, striped mullet, and Atlantic croaker. Most activity (76 percent) occurred in the Atlantic Ocean north of Cape Hatteras, Bogue Sound, Core Sound, and the Atlantic Ocean south of Cape Hatteras.

3.3.2.5.3.3 Long Haul Seine Fishery

Commercial

This category II fishery is unique to North Carolina and includes any fishing activities that use this gear, regardless of the target species. The long haul seine fishery occurs within estuarine waters of Pamlico and Core Sounds and their major tributaries (DeVries and Ross 1983). Although approximately 90 crews participated in this fishery during the 1970s, today there are only 10-14 crews working statewide (Gearhart and Lewis 2001). Four of the crews operate in the southern areas in water 4-9 feet in depth; six to ten crews operate in the northern areas in water 12-18 feet in depth.

The fishery occurs from February through November with a peak in effort from June through October (Cunningham et al. 1992). Approximately 65 percent of the landings consist of Atlantic croaker, spot, and weakfish. Other species harvested include menhaden, bluefish, and spotted seatrout.

The long haul seine consists of a net 3,608.9 – 4,757.2 feet (1,100 to 1,450 m) in length that hangs 6 feet (1.8 m) in the water column (Guthrie et al. 1973). The seine is pulled by two 9.2 – 13.7-m (30-45 feet) boats for distances up to 2-3 km (1-2 nmi) (DeVries 1982). While the seine is being towed, the float line of the net remains a few feet under the water surface (depending on the depth of the water) and the lead line stays on the bottom (Guthrie et al. 1973; DeVries 1982). The seine consists of four 100 to 150-yard (900 to 1,350-m) sections of wing net (1.1 mm nylon twine) with a 4-inch (10.2-cm) mesh and two back nets (1.5 mm nylon twine) with a 2.5 inch (6.4 cm) mesh (Gearhart and Lewis 2001). Another part of the fishery includes a sweep seine or deeper net that has a bunt with 1.75 inch (4.45 cm) mesh (1.2 mm nylon twine) (Guthrie et al. 1973). The long haul seine is fished in 7-20 feet (2-6 m) of water and bunted in water 3 feet (1 m) deep at slack tide (Guthrie et al. 1973; DeVries 1982). To set, pull and haul in the long haul seine typically takes a full day (DeVries and Ross 1983) with a six-man crew (Guthrie et al. 1973).

3.3.2.5.3.4 Stop Net Fishery

Commercial

The North Carolina stop net fishery occurs only on Bogue Banks, North Carolina from October through November annually. The fishery targets striped mullet using a beach seine to catch the fish that were corralled with an anchored multi-filament net (the stop net). Two crews of approximately 20 fishers each currently use this gear at no more than two of six sites permitted by NCDMF. Landings data for this fishery are not available from NCDMF because they are combined with landings data for all beach seines and because of North Carolina confidentiality rules.

The stop net is approximately 400 yards (366 m) in length and is constructed of three sections: the suds, backstaff, and lead. The suds section is anchored to the beach and extends perpendicular to shore approximately 100 yards (91.4 m). This section of net is 8-in mesh with a net depth of 10 feet (3.1 m). The backstaff section continues perpendicular to shore another 100 yards (91.4 m) with the same mesh size, but the net depth is 16 feet (4.9 m). The lead section runs from the end of the backstaff parallel to shore 200 yards (182.9 m) and has a mesh size of 6 inches (15.2 cm). Soak durations for the stop net gear ranges from one to fifteen days depending on weather, catch rates, and the presence of migrating schools (Asher 2001). The stop net gear is deployed again after the weather conditions or fish availability becomes more favorable. Prior to October 1, 1993, stop net gear was primarily 4-inch (10.2 cm) mesh throughout. Due to conflicts with local pier owners; however, the NCDMF implemented a regulation that increased the minimum mesh size to 8 inches (20.3 cm) for the suds/backstaff and 6 inches (15.2 cm) for lead.

Recreational

Recreational stop nets are not allowed in North Carolina.

3.3.2.6 South Carolina

3.3.2.6.1 Gillnet Fishery

Commercial

Gillnets operated in ocean waters west of 72° 30'W off South Carolina are part of the category II fishery, Southeast Atlantic Gillnet Fishery. Gillnets are also used in South Carolina's inshore waters; however, they are not a part of this category II fishery. The South Carolina Department of Natural Resources (SCDNR) classifies two types of gillnets: the shad gillnet and the non-shad gillnet (termed gillnet by the state). Both types of nets must be tended, with the operator within 500 feet (152.4 m) of the net.

In 2002, there were 335 licenses issued for non-shad gillnets. The majority of the 335 licensees used non-shad gillnets in the Atlantic Ocean. State regulations require that these nets must be 100 feet (30.5 m) or less in length with a mesh size no smaller than 3.0 inches (7.6 cm) and up to, but not including 4.5 inches (11.4 cm). Non-shad gillnets in inshore salt waters are restricted to two areas designated by SCDNR; one area is near the mouth of the Edisto River and the other area is near Little River Inlet. Nets in these areas must be 300 feet (91.4 m) or less in length with a mesh size between 3.0 and 5.5 inches (7.6 – 14.0 cm). Regulations on net length for non-shad gillnets preclude commercial quantities of catch. As a result, the majority of fishermen with a license for a non-shad gillnet fish recreational (i.e. they do not sell their catch). Non-shad gillnets are used year-round; however, effort is greatest from September through November. The catch is primarily spot, striped mullet, and flounder.

There were 658 fishers licensed to use shad gillnets in 2002. The licensed fishers set nets in the ocean (nearshore, less than 3 nmi from shore), inshore salt waters, and fresh waters. Shad gillnets in nearshore waters must be 6,000 feet (1,828.8 m) or less in length, have a mesh size of 5.5 inches (14.0 cm) or greater, and be freely drift fished. The same mesh-size restrictions exist for shad gillnets set inshore and in fresh water; however, inshore nets are limited to 900 feet (274.3 m) and freshwater nets are limited to 600 feet (182.9 m) in length. Anchored or drift gillnets can be used inshore and in fresh water, but most fishers use anchored nets. As a result of longer gillnets being allowed, licenses for shad gillnets are used commercially. Shad are harvested from January through mid-April and consist of primarily American shad.

The Fishery Management Plan implemented by the Atlantic States Marine Fisheries Commission (ASMFC) for American shad, hickory shad, and river herring requires a phase out of the ocean-intercept fishery with a total closure of the fishery by 31 December 2004.

Recreational

Gillnets are classified as commercial fishing gear in South Carolina, thus, there is no recreational license for gillnets. As mentioned above, however, most commercial licenses for non-shad gillnets are actually used for recreational purposes.

3.3.2.6.2 Atlantic Blue Crab Pot/Trap Fishery

Commercial

There were 412 licensed commercial crab fishermen in 2002. Each fisherman is allowed to set up to 200 pots/traps each. Crab pot buoys must be attached with sinking or neutrally buoyant line/rope. Each primary trap buoy must have the fisher's identification number. Crab pots must be tended at least every 5 days, but are generally fished more frequently.

SCDNR reports that for the 2000-2001 season, there were over 30,000 pots in South Carolina waters. Commercial catches account for nearly 60 percent of the harvest. Crab pots are fished year-round, primarily in the estuaries. During the winter, some fishers move their pots to deeper more open waters.

Recreational

Each recreational fisherman is allowed to set a maximum of two pots/traps without a license. Recreational crab fishermen often use the same pots as commercial crab fishermen. In 1998, NMFS (McFee and Brooks 1998) reported there were 30,000 to 40,000 recreational pots in South Carolina waters, accounting for 40 percent of the harvest. This is the latest estimate available according to SCDNR.

3.3.2.7 Georgia

3.3.2.7.1 Gillnet Fishery

Commercial

Gillnets operated in ocean waters west of 72° 30'W off Georgia are part of the category II Southeast Atlantic Gillnet Fishery. Gillnets are also used in Georgia's inshore waters; however, they are not a part of this category II fishery. There is some effort off southern Georgia in the Southeastern U.S. Atlantic Shark Gillnet Fishery. This effort occurs primarily between April and November and is further described under Florida in Section H.

The state of Georgia has prohibited the use of gillnets in state waters since 1957, with some exceptions for shad and sturgeon (Georgia Code 27-4-7). The law was expanded in May 2000 so that no other species managed by the state may be landed (brought to shore) in Georgia when caught in a gillnet, regardless of where the fish were caught (i.e. federal waters, etc.). In 1998, the Atlantic States Marine Fisheries Commission (ASMFC) amended the Fishery Management Plan for Atlantic sturgeon, prohibiting harvest of the species.

The commercial inshore shad fishery is allowed in portions of five river systems (Altamaha, Ogeechee, Satilla, Savannah, and St. Marys) from 1 January to 31 March (Haymans 2001). Where fishing for shad is allowed, regulations are very restrictive in terms of days and areas that can be fished. Monofilament drift and set gillnets are used, but both must have a mesh size that is at least 4.5 inches (11.4 cm). Set nets are not allowed in portions of the Savannah River System.

Set nets are the primary gear used in fresh water while drift nets are used primarily in saltwater (Haymans 2001). Set nets are typically 50 to 75 feet (15.2 - 22.9 m) in length, but can be no longer than 100 feet (30.5 m) and must be placed at least 600 feet (182.9 m) apart. Drift nets are prohibited from being longer than 1,000 feet (304.8 m) in salt water and must be fished at least 300 feet (91.4 m) apart. Most drift nets are less than 300 feet (91.4 m) long. Mesh sizes of drift nets range between 4.5 to 5.0 inches (11.4 – 12.7 cm) from January through early February, after which fishermen use 5.25 to 5.5 inches (13.3 – 14.0 cm) to target roe shad.

The Georgia Department of Natural Resources (GADNR) does not officially record the number of commercially licensed fishers participating in the gillnet fishery for shad. When renewing their licenses, fishers voluntarily check-off the commercial fisheries in which they plan to participate. In 2002, 219 fishers reported that they planned to gillnet for shad; however, only 21 actually reported landings.

Recreational

Recreational gillnets are not allowed by GADNR.

3.3.2.7.2 Atlantic Blue Crab Pot/Trap Fishery

Commercial

The commercial blue-crab pot fishery has been a limited entry fishery since 1998, with a maximum of 159 licenses. All licenses are either renewed or issued by a lottery every year (Haymans 2001). Each license holder must obtain a certificate for pots in increments of 50 with a maximum of 200 pots. During the April 2002-March 2003 license year, pot certificates were issued that totaled 17,300 pots, down from 18,400 the previous season. Prior to the limited-entry system, GADNR estimated that 38,000 pots were being commercially fished.

GADNR requires escape rings (2.38-inch unobstructed opening) on two of the vertical walls of the trap, except for peeler traps. Crab pots are only allowed in waters designated as salt waters. Each pot must have a float attached and be marked with an identifier. Crab pots may be used throughout the year.

Landings of hard crabs in 2002 were 2,026,000 lbs, a reduction from the 2,697,125 lbs. landed in 2001 (www.state.ga.us/dnr/coastal/fishstat/). The decrease in landings is thought to be due to environmental influences resulting from the drought in Georgia.

Some fishermen have begun to use crab pots with inverted bait wells to reduce the depredation of bait by bottlenose dolphins. Dolphins are not able to access the bait-well door because it is accessed from inside the trap. In an informal survey conducted by GADNR on 25 percent of the population, 40 percent of crab fishermen used these inverted bait wells or other modifications to ward off dolphins. The heaviest usage was in the county with the heaviest concentration of crab fishermen, McIntosh County.

Recreational

Recreational crab fishermen are allowed to fish a maximum of six pots. Recreational fishers have been required to obtain a recreational fishing license since 1998; however, GADNR does not record how many of the participants use crab pots. The Marine Recreational Fisheries Statistics Survey (MRFSS) estimated that 20,466 households participated in crabbing activities in 1991.

3.3.2.8 Florida

3.3.2.8.1 Gillnet Fishery

Commercial

In July 1995, Florida passed a constitutional ban on the use of gillnets and certain other net gear in state waters. Gillnet activity in federal waters; however, still occurs. Fishers use both strike nets and drift nets. Strike nets are made of monofilament except when sharks are being targeted, when nylon is used. The gillnet fishery is separated into two classifications: the Southeastern U.S. Atlantic shark gillnet fishery and the Southeast Atlantic Gillnet fishery (for non-sharks). The Atlantic Large Whale Take Reduction Plan (ALWTRP) defines a shark gillnet as one having webbing of 5 inches (12.7 cm) or greater stretched mesh (50 CFR 229.2). Both are category II fisheries.

3.3.2.8.2 Southeastern U.S. Atlantic Shark Gillnet Fishery

This category II fishery includes all gillnets with a mesh size greater than 5 inches stretched mesh used to target sharks in waters south of a line extending due east from the North Carolina/South Carolina border and south and east of the fishery management council demarcation line between the Atlantic Ocean and the Gulf of Mexico (50 CFR 600.105). There are currently 6 boats participating in this fishery. Fishing occurs off southern Georgia, and northern and central Florida.

Sharks are landed by drift nets and strike nets. The most common type is the drift gillnet, which is generally set at night and may soak for 6 to 12 hours. Fishermen typically use monofilament webbing when they are targeting small coastal sharks; twine sizes range from 0.52 to 0.57 mm (0.020 - 0.022 in). Multifilament webbing is used when large coastal sharks are being targeted; twine sizes are between 1.65 and 2.16 mm (0.06 - 0.09 in). Stretched-mesh sizes typically range from 12.7 to 38.1 cm (5 - 15 in) and net lengths range from 364.8 to 2280 m (1197 - 7480 feet).

Strike nets are also used to harvest sharks; however, only two to three of the fishermen are outfitted with this gear. The nets are used to encircle schools of sharks that are spotted by the crew on the fishing vessel or plane or with the cooperation of shrimp trawlers who see sharks following their boats. Often, a smaller boat is added to the operation to help wrap the net around the school. The visual methods used in this fishery dictate that it must occur during the day. Soak times are short, usually less than one hour. The nets are nylon instead of monofilament. Stretched-mesh sizes typically range from 12.1-25.4 cm (4.8 - 10 in) and net lengths range from 273.6-1623.4 m (897.6 – 5326.1 feet). The net is deeper (~70 feet or 21 m) than the drift nets (~30 feet or 9 m) so it will reach the ocean floor and prevent escape of the school.

NMFS regulates the commercial harvest of sharks, in part, by establishing semi-annual quotas for particular groups of sharks (ridgeback and non ridgeback, large coastal sharks; small coastal sharks; and pelagics). For large coastal sharks, the first season typically begins on 1 January and lasts through April to May depending on the group, unless the quota is estimated to be met before the closing date (67 FR 78990). The second season opens again on 1 July and usually closes in September for the large coastal group. In recent years, the quota for the small coastal group has not been reached and the fishery has not closed. Fishermen at times have received a large return for landing the large coastal sharks. As a result these species are targeted when both fisheries are open concurrently.

The large coastal shark season is usually already closed by the beginning of the right whale season and does not re-open until 1 January. Although the small coastal shark season may be open, fishers often target non-sharks from September until 1 January. Fishermen targeting sharks are able to use strike nets in the Restricted Area and Restricted Period as defined in the ALWTRP if they meet certain provisions (no night sets, a spotter plane must be used, sets are not made if a large whale is seen within 3 nmi of the area, and nets must be removed if a large whale comes within 3 nmi of the area). In addition, fishers planning on using gillnets (strike or drift) in the Southeast U.S. Observer Area for sharks during the right whale season must notify NMFS at least 48 hours in advance of departure to arrange for observer coverage (50 CFR 229.32(f)). The Southeast U.S. Observer area includes the Restricted Area and extends south to 26° 46.5'N. Most of the landings occur in months other than the right whale season (EA for the ALWTRP-Feb. 2002) when there is less observer coverage.

The Atlantic Large Whale Take Reduction Plan (ALWTRP) prohibits the use of straight sets of non-shark gillnets at night during the right whale season (15 November to 31 March) in the Southeast U.S. Restricted Area (the area from 32° 00' N south to 27° 51' N from the shore eastward to 80° 00'W) (50 CFR 229.32 (f) (3)(iii)). During the right whale season, sharks are often more available south of the Restricted Area and effort, even strike net effort, is greatest there. As the right whale season ends, water temperatures increase and sharks begin to move north. At this time, effort is greatest off southern Georgia and in Florida north and around Cape Canaveral.

3.3.2.8.3 Southeast Atlantic Gillnet Fishery

Commercial

This fishery includes all gillnets targeting any species other than sharks in waters south of a line extending due east from the North Carolina/South Carolina border and south and east of the fishery management council demarcation line between the Atlantic Ocean and the Gulf of Mexico (50 CFR 600.105).

Gillnets were prohibited in state waters of Georgia in 1957 and Florida in 1995. Gillnet activity in federal waters; however, still occurs. The majority of gillnet trips in federal waters off Florida occur off Brevard, St. Lucie, and Martin Counties. Fishers use both strike nets and set nets.

Mesh sizes depend on the targeted species, but most are between 3.25 and 5 inches (8.26 and 12.7 cm) stretch. The depth of nets typically ranges from 25 to 250 meshes deep. Strike nets are used for pompano, Spanish mackerel, bluefish, blue runner, and little tunny/bonito. Set nets are used for spot and kingfish. The set nets are usually “anchored” with a heavy lead line and no true anchor is used. The ALWTRP prohibits the use of straight sets of gillnets (set nets) at night from 15 November through 31 March in the Southeast U.S. Restricted Area (the area from 32° 00’ N south to 27° 51’ N from the shore eastward to 80° 00’W) (50 CFR 229.32 (f) (3)(iii)). Fishermen are able to use strike nets night or day as defined in the ALWTRP.

Nets used for pompano must be 1,200 feet in length and have a minimum stretched mesh size of 4.5 in. Gillnets for bluefish must be tended, only one net per fisher that is no longer than 1,800 feet, soak time must be less than one hour, and mesh size (stretch) must be 3 inches or greater. Stretched mesh sizes range from 3.25 to 5 in. There is a 7,500 lb. trip limit and an annual quota of 877,000 lbs. for the East Coast Region of Florida. The fishery begins 1 January and extends throughout the year unless the annual quota is met.

Anecdotal information suggests that fishermen who have permits for commercial fishing for Spanish mackerel proceed to the EEZ in the early morning and return by evening. Since the fishing boats that are used tend to be relatively small “work boats” and have a crew of two persons, nighttime fishing is likely to be disadvantageous in terms of safety while fishing, locating and netting fish, and during the return to port, should adverse weather or seas develop. To target Spanish mackerel on commercial fishing trips in the mid-Atlantic EEZ and South Atlantic EEZ, the Southeast FMPs require a minimum mesh size of 3.5 inches stretched, although 500 pounds of Spanish mackerel per trip is allowed for incidental catch for smaller mesh sizes [50 CFR § 622.41, (c) (3) (ii)]. However, if the mesh size is less than 4.75 inches stretch, then the incidental catch of king mackerel may exceed no more than 10 percent of the number of Spanish mackerel on board. In addition, along the Florida east coast (north of the Miami-Dade and Monroe County line), a float line no longer than 800 yards, and a soak time of no more than one hour are allowed.

The Coastal Migratory Pelagic (CMP) FMP lists species that can be harvested with run-around gillnets and other net gear. Those species include Spanish mackerel, bluefish, and little tunny (which may include bonito), but not king mackerel. The run-around gillnet is the most important gear for Spanish mackerel. Two other kinds of nets, cast nets and stab gillnets, are also authorized gear in commercial fishing for Spanish mackerel under the FMP (NMFS 2001). Anecdotal information suggests that fishermen who have permits for commercial fishing for Spanish mackerel proceed to the EEZ in the early morning and return by evening. Since the fishing boats that are used tend to be relatively small “work boats” and have a crew of two persons, nighttime fishing is likely to be disadvantageous in terms of safety while fishing, locating and netting fish, and during the return to port, should adverse weather or seas develop. However, night-time fishing is known to occur in this fishery, as fishers “fish on the fire” (or phosphorescence) when conditions permit. To target Spanish mackerel on commercial fishing trips in the mid-Atlantic EEZ and South Atlantic EEZ, the Southeast FMPs require a minimum mesh size of 3.5 inches stretched, although 500 pounds of Spanish mackerel per trip is allowed

for incidental catch for smaller mesh sizes [50 CFR § 622.41, (c) (3) (ii)]. However, if the mesh size is less than 4.75 inches stretch, then the incidental catch of king mackerel may exceed no more than 10 percent of the number of Spanish mackerel on board. In addition, along the Florida east coast (north of the Miami-Dade and Monroe County line), a float line no longer than 800 yards, and a soak time of no more than one hour are allowed.

Recreational

Recreational gillnets are not allowed.

3.3.2.8.4 Crab Pot/Trap Fishery

Commercial

The blue crab fishery occurs throughout the year in fresh, estuarine, and oceanic waters (Steele and Bert 1998). Landings peak during the summer months, particularly in July (Steele and Bert 1998). On the east coast of Florida, landings are greatest north of Indian River County with landings greatest in Brevard and St. Johns Counties. The state of Florida currently imposes a moratorium on the sale of blue crab licenses. Therefore, no new blue crab endorsements are available at this time.

In 1997, there were 6000 estimated commercial crab fishers in the state of Florida (McFee and Brooks 1998). Commercial crab fishermen must have a Saltwater Products license and the Blue Crab and Restricted Species endorsements. There is no limit on the number of pots a licensed crab fishermen can set. In Florida, crab pots/traps must be constructed of wire mesh with a minimum size of 1.5 inches and have a maximum dimension of 2 foot x 2 foot x 2 foot or a volume of 8 cubic feet. Pots must also have a degradable panel and escape holes for undersized crabs. The bait-well door is hinged and is held closed against the trap with a bungee cord, which is then secured with a 1.6 cm stainless steel hog ring (C-shaped metal clips attached with pliers) (Noke 1999). One of the sides can be opened to remove crabs; this side is kept closed with biodegradable twine or corrodible hook (Noke 1999). Crab pots must have a buoy attached that has the fisher's identification number. Pots may only be fished during daylight hours (one hour after sunset until one hour before sunrise). Most crab fishers fish their pots every 1-3 days. Traps are pulled by either an electric winch or by hand.

Crab fishermen in the Indian River Lagoon have used several methods to deter depredation of bait by bottlenose dolphins. These methods include double doors to get to the bait well, attaching long-line clips or cable ties to keep the bait-well door closed, and attaching a buoy to the pot directly to keep the pot in an upright position while or after a dolphin tries to tip the pot and extract the bait (Noke 1999).

Recreational

Blue-crab pot specifications are the same for recreational and commercial crab fishermen. If the crab pots are not fished from a dock, the identification information located on buoys must include a 2-inch high "R" and the harvester's name and address. Florida residents with a recreational saltwater fishing license are able to fish up to five pots, which must be pulled

manually. The Florida Fish and Wildlife Conservation Commission does not have an estimate for the number of crab traps used by recreational fishers.

3.3.3 Community Structure

Communities that are involved with the fishing industry throughout the United States vary in the amount they depend upon the industry for their livelihoods. People living in coastal communities may derive all of their income from the fishing industry, while others may earn a portion of their income through other means. Coastal communities may offer opportunities for employment other than with the fishing industry, while some communities are almost totally dependent on the sustained use of marine resources. It is difficult to determine from census data how many people are actually involved in fishing since the census data lumps agriculture, fishing, and forestry together under the same category. Also, many people who derive at least a portion of their income from fishing may have other sources of income and they may check another category, other than fishing, for their occupation when filling out their census data.

The population in many of the coastal areas of the United States continues to grow and new development is often dominated by tourism, urban housing and retirement communities, and marine recreational areas. It is becoming more common for traditional fishing communities to become marginalized by increasing development, which brings in more people, increased property values, competition for resources, and increased zoning restrictions and code enforcement that may not be favorable to the fishing industry. At the same time, increased regulations and restrictions in the fishing industry have made commercial fishing less profitable for many fishing families. Some coastal communities offer alternative types of employment for fishermen who want to supplement their fishing activities or for those who choose to give up fishing for a living all together, while other communities offer little economic opportunities outside of fishing.

The following community descriptions provide an overview of some of the communities along the Atlantic Coast where some families continue to derive at least a portion of their income from gillnet fishing (Table 15). The descriptions are based on data derived from 1998 NMFS dealer weighout data of commercial landings and research done by McCay and Cieri (2000), the Mid-Atlantic Fishery Management Council and the New England Fishery Management Council (1999), and Minerals Management Service (1993). Due to the recent implementation of management plans for dogfish, the landings in the commercial gillnet fishery have changed in most of these communities since these descriptions were written. However, these reports represent the best available descriptions of communities involved with gillnet fishing at this time.

The community descriptions focus on those sectors that are directly impacted by the action alternatives, rather than describe the entirety. The Alternatives generally focus on North Carolina-northward, as that is the area affected by the majority of the fishing restrictions. Therefore, the following description will focus on those states and areas/communities subject to the potentially more substantive fishing restrictions in the Preferred Alternative. Updated community description information for South Carolina, Georgia, and Florida does not currently

exist, other than the information provided in the fishery practices section. NMFS is currently working with the Fishery Management Councils to fill this information gap.

Table 15: Communities involved in the gillnet fisheries: 1998 commercial landings, based on NMFS dealer weighout data. Only ports that have gillnet landings of 10 percent or more for pounds or value are reported.

Name of State or Community	Total pounds *	Total value *	Gillnet total pounds (%) **	Gillnet total value (%) **
New Jersey	191,510,458	90,919,181		
Point Pleasant	31,916,900	16,715,400	12.0	14.2
Long Beach Island	10,032,800	10,194,400	75.8	44.7
Delaware	7,768,538	5,592,053		
Total gillnet in Delaware			14.2	12.2
Maryland	61,167,928	67,189,569		
Ocean City	11,073,123	6,356,802	28.1	13.7
Virginia	560,831,406	110,690,207		
Virginia Beach/ Lynhaven	7,812,000	4,272,800	71.6	44.4
Northampton County	8,468,400	5,001,400	10.9	9.4
Accomack	11,077,100	8,485,000	34.6	19.8
North Carolina	177,534,701 (missing confidential data numbers)	98,940,376		
Hyde County	16,079,800	10,921,600	20.0	15.4
Dare County	36,625,800	23,511,500	37.1	23.3

* All commercial fisheries landed in 1998

** Does not include runaround nets

3.3.3.1 New Jersey

New Jersey is one of the most densely populated states in the nation. Although it is a small state, it has over 100 miles of coast line. Only 0.2 percent of the population of New Jersey listed their occupation as fishing, farming, or forestry in the 2000 Census (Table 16).

The ocean fishery is centered around Barnegat Light and extends from Point Pleasant to Cape May. An extensive gillnet fishery also exists in Delaware Bay. The majority of fishing is in state

waters, although some fishing takes place 20-200 miles offshore. Fishers use large mesh nets for monkfish and dogfish generally in the EEZ. The size of a typical net is 2,400 to 6,000 feet in length with mesh ranging 6 to 12 inches. Smaller mesh nets are used for bluefish, weakfish, and bonito. Small nets are mainly used in state waters with nets 1,200 to 2,400 feet in length with a 3.4 to 5 inch mesh. Gillnets are most often in the water from March to November with peak fishing in the spring and fall, when species migrate along the coast. During the winter months of December through February the gillnet fishery is limited to fisheries for monkfish and, before new regulations, spiny dogfish. In 1998, there were approximately 300 licensed gillnet fishermen in New Jersey. Less than a third of the fishermen fished more than part time. In 1998, the ocean fishery had less than 40 active fishermen who fished more than a few months per year (NMFS 1998).

3.3.3.2 Long Beach Island (Ocean County), New Jersey

Ocean County continues to grow due to tourism on the coast, increased development of retirement communities, and general expansion of populations in the New Jersey-New York areas (Table 17). The fishing port of Long Beach Island is located in the small bayside municipality of Barnegat Light, on a long, densely-developed barrier island on the central New Jersey coast. According to the 1998 NMFS weigh-out data (Table 15), 75.8 percent of total pounds landed in Long Beach Island are landed with gillnets. This represents 44.7 percent of the total value of fish landed for the community. Sixty-one species were caught using drift gillnets, including mackerel, dogfish (now restricted), flounders, tunas, weakfish, shad, and sharks. There are 23 species caught with sink gillnets. Spiny dogfish represented over one-third of the total landings in 1998 (NMFS 1998).

3.3.3.3 Barnegat Light Borough, New Jersey (Ocean County)

Barnegat Light is one of New Jersey's most important ports. In the community of Barnegat Light Borough, 6.5 percent of the population listed their occupation as fishing, farming, or forestry in the 2000 Census (Table 18). Many members of the East Coast's longline fleet, scallop vessels, and a fleet of inshore gillnet fishermen reside at this port. Recreational and charter boats also launch from this port. There are five marinas in Barnegat Light. The two largest docks have 36 full-time resident commercial boats, approximately 40 recreational and charter boats, and some transient boats. There is another dock that is strictly commercial with seven scallop boats, ten longliners, and nine inshore-fishing gillnet boats (McCay and Cieri 2000).

Members of the Barnegat Light community stress the importance of the fishing industry for sustaining and preserving their community. The marinas are the major source of taxes for the community, according to representatives of the community's taxpayers association. Two of the five marinas are primarily dependent on the commercial fisheries. Small businesses are able to stay open all year round because of the fishing industry. This has stabilized the community to where in 2000 the Barnegat Light community had the lowest crime rate on the island.

Barnegat Light is mainly a longline fishing community, but they also have a small group of coastal gillnet fishermen. According to McCay and Cieri (2000), residents cited extensive regulations that have caused economic problems for the fishing community. Restrictions on fishing make it difficult for people to change to other fisheries, and reductions in catches have reduced overall income. It is difficult to find crews in the area due to competition for workers for construction and service industries for tourism.

Residents are concerned with the loss of income from fishing, and the increasing regulations that force boats to dock in other areas. The continuing decline or demise of commercial fishing in the area will bring in more condominium development in place of marinas. According to McCay and Cieri (2000), since the fishing industry is seen as part of the identity of Barnegat Light, the end of fishing will be seen as an end to Barnegat Light as it is known today.

Table 16: New Jersey Census Data. Source: Census Bureau 2000

Population in 1990	7,730,188	
Population in 2000	8,414,350	
Census Data from 2000	Number or Value	Percent
Sex		
Male	4,082,813	48.5
Female	4,331,537	51.5
Employment Status		
Population 16 and over in civilian labor force	4,193,145	64.2
Employed	3,950,029	60.3
Unemployed	243,116	3.7
Median family income	\$65,370.00	
Per capita income	\$27,006.00	
Occupation		
Farming, fishing, and forestry occupations	6,963	0.2
Industry		
Agriculture, forestry, fishing and hunting, and mining	12,618	0.3
Poverty Status in 1999: number below poverty level		
Families	135,549	6.3

Table 17: Ocean County, New Jersey Census Data (includes the communities of Point Pleasant and Long Beach Island). Source: Census Bureau 2000

Population in 1990	433,203	
Population in 2000	510,916	
Census Data for 2000	Number or Value	Percent
Sex		
Male	242,596	47.5
Female	268,320	52.5
Employment Status		
Population 16 and over in civilian labor force	224,951	55.7
Employed	213,336	52.8
Unemployed	11,615	2.9
Median family income	\$56,420.00	
Per capita income	\$23,054.00	
Occupation		
Farming, fishing, and forestry occupations	453	0.2
Industry		
Agriculture, forestry, fishing and hunting, and mining	834	0.4
Poverty Status in 1999: number below poverty level		
Families	6,631	4.8

Table 18: Barnegat Light Borough, New Jersey Census Data. Source: Census Bureau 2000

Population in 1990	681	
Population in 2000	764	
Census Data from 2000	Number or Value	Percent
Sex		
Male	389	50.9
Female	375	49.1
Employment Status		
Population 16 and over in civilian labor force	300	46.1
Employed	292	44.9
Unemployed	8	1.2
Median family income	\$66,406.00	
Per capita income	\$34,599.00	
Occupation		
Farming, fishing, and forestry occupations	19	6.5
Industry		
Agriculture, forestry, fishing and hunting, and mining	24	8.2
Poverty Status in 1999: number below poverty level		
Families	6	2.6

3.3.3.4 Delaware

Delaware mostly borders on the Delaware Bay and its tributaries. It does not have extensive inshore and EEZ ocean fisheries. Recreational fishing predominates, and only 0.5 percent of the population listed their occupation as fishing, farming, or forestry in the 2000 Census (Table 19). Most commercial fishing in Delaware is focused on blue crab, quahogs, and horseshoe crabs. Of the 8 million commercial pounds landed in 1998, 72 percent were blue crabs. In 1998, gillnets were responsible for 14.2 percent of the total commercial pounds landed and 12.2 percent of the total value for commercial fishing in Delaware (Table 15). Even though commercial harvesting of blue crabs is important to the fishing industry, recreational fishing predominates in Delaware.

There is an extensive gillnet fishery in Delaware Bay consisting of anchored and drift gillnet fisheries. Drift gillnets that target weakfish, bluefish, spot, and menhaden are set for several hours and brought in the same day. The main fishery activity takes place from April to December, mostly in Delaware Bay. Anchored gillnets target primarily shad and weakfish which are set for several days but tended on a daily basis. The maximum anchored gillnet effort is generally reached in April to May. A total of 255 commercial fishing licenses were issued in 1994, which included licenses to 126 gillnet fishermen. A moratorium on gillnet licenses was put in place in 1984, which restricted new fishermen from entering into the gillnet fishery (NMFS 1998).

Table 19: Delaware Census Data. Source: Census Bureau 2000

Population in 1990	666,168	
Population in 2000	783,600	
Census Data from 2000	Number or Value	Percent
Sex		
Male	380,541	48.6
Female	403,059	51.4
Employment Status		
Population 16 and over in civilian labor force	397,360	65.1
Employed	376,811	61.7
Unemployed	20,549	3.4
Median family income	\$55,257	
Per capita income	\$23,305	
Occupation		
Farming, fishing, and forestry occupations	1,926	0.5
Industry		
Agriculture, forestry, fishing and hunting, and mining	4,042	1.1
Poverty Status in 1999: number below poverty level		
Families	13,306	6.5

3.3.3.5 Maryland

In 1998, Maryland had a coastal gillnet fishery for shad, smooth dogfish, spiny dogfish, weakfish, striped bass, and monkfish. Today the gillnet fishery has contracted due to new regulations on shad and dogfish. In 1998, there were approximately 14 local (Maryland residents) and at least 25 transient (generally from New England) gillnet fishermen. The transient gillnet fishermen target mostly monkfish and dogfish, and were active off Maryland in the winter and spring. They all fished out of Ocean City. There is a small fishery that takes place during the spring and the fall for striped bass and weakfish using both anchored and drift gillnets. These fisheries are within three miles of shore (NMFS harbor porpoise TRP 1998). According to the 2000 census data, 0.3 percent of Maryland's population claim fishing as their occupation (Table 26).

3.3.3.6 Ocean City, Maryland

Ocean City is the major port for ocean fisheries of the EEZ and of the Mid-Atlantic Fishery Management Council. In 1998, the commercial gillnet fishery represented 28.1 percent of landed pounds of fish, and 13.7 percent of the total value landed in Ocean City (Table 15). At that time, spiny dogfish represented 21.6 percent of total pounds and 5.6 percent of the total value of fisheries. Due to increased regulations on dogfish, the gillnet fishery is much smaller today. Ocean City has a number of smaller boats - up to 50 feet - that gillnet for a variety of finfish species including black sea bass. Black sea bass is caught mostly with fish traps but also gillnets and trawls. Atlantic croaker and Atlantic mackerel are caught by trawlers and gillnet fishermen.

Ocean City is on a ten-mile long barrier island. It is the only major ocean fishing community in Maryland. The commercial fishing industry is actually located in West Ocean City. In West Ocean City the seafood businesses and boats are on one side of the street and small houses are on the other. Ocean City is a large tourist community with rental properties spanning the length of the island. In the last 20-25 years it has become a major summer resort. It is billed as the white marlin capital of the world. The waterfront is dominated by recreational marinas. There are also several marinas in Ocean City and one in West Ocean City at the harbor used for commercial fishing.

According to the 1990 Census, 5,146 people lived in Ocean City, of which, 66 people were in the fishing industry. According to the 2000 census, only 12 people, or 0.3 percent of the population of Ocean City listed their occupation as fishing, farming, or forestry. In 2000, 22.8 percent of the population in Ocean City worked in retail, followed by service occupations (Table 21). Many of the fishermen who work out of West Ocean City live within 30 minutes of the harbor and on the land side. Very few fishermen can now afford to live in Ocean City. If there are further restrictions on the fishing industry here, people may make less income and need to move further away from the ocean as they compete for space in a heavy tourist market.

Condominium development is a major issue for Ocean City. Commercial docks are located between a business section and a residential section, and residents are quick to point out zoning

violations. Expensive homes are built close to the harbor, which impacts commercial fishing properties due to new zoning and regulations. Some of the old fish houses were torn down and replaced with other businesses or houses. New rules continue to drive out fishing by restricting business hours, gear storage, etc. According to interviews by McCay and Cieri (2000), people living in condominiums don't want clam boats unloading near where they live.

Table 20: Maryland Census Data. Source: Census Bureau 2000

Population in 1990	4,781,468	
Population in 2000	5,296,486	
Census Data From 2000	Number or Value	Percent
Sex		
Male	2,557,794	48.3
Female	2,738,692	51.7
Employment Status		
Population 16 and over in civilian labor force	2,737,359	67.0
Employed	2,608,457	63.8
Unemployed	128,902	3.2
Median family income	\$61,876.00	
Per capita income	\$25,614.00	
Occupation		
Farming, fishing, and forestry occupations	6,886	0.3
Industry		
Agriculture, forestry, fishing and hunting, and mining	16,178	0.6
Poverty Status in 1999: number below poverty level		
Families	83,232	6.1

Table 21: Ocean City, Maryland Census Data. Source: Census Bureau 2000

Population in 1990	5,146	
Population in 2000	7,173	
Census Data From 2000	Number or Value	Percent
Sex		
Male	3,680	51.3
Female	3,493	48.7
Employment Status		
Population 16 and over in civilian labor force	3,899	60.3
Employed	3,538	54.7
Unemployed	361	5.6
Median family income	\$44,614.00	
Per capita income	\$26,078.00	
Occupation		
Farming, fishing, and forestry occupations	12	0.3
Industry		
Agriculture, forestry, fishing and hunting, and mining	16	0.5
Poverty Status in 1999: number below poverty level		
Families	112	6.0

3.3.3.7 Virginia

The 2000 Virginia census population data states that 0.5 percent of Virginia's population claim fishing as their occupation (Table 22). Virginia coastal gillnet fisheries use both anchored and drift gillnets to harvest anadromous as well as coastal pelagic and nearshore species. Large mesh gillnet fisheries are more prevalent during the spring and early summer months, for harvesting dogfish, other sharks, and black drum. In coastal Virginia waters there is a modest harvest of dogfish during winter. This fishery mainly takes place in winter and spring months in both state and adjacent federal waters. Smooth dogfish landings peaked in the spring, while spiny dogfish peak in winter. A small portion of the late winter and early spring American shad gillnet harvest

occurs in federal waters. In excess of 600 individuals hold gillnet licenses. Of those, approximately 50 fish 100 days or more per year in coastal waters (NMFS 1998).

3.3.3.8 Virginia Beach/Lynhaven, Virginia

In 1998, the commercial gillnet fishery represented 71.6 percent of pounds landed, and 44.4 percent of the total value of the fish landed in Virginia Beach/Lynhaven (Table 15). Most of the commercial fishing activity in Virginia Beach occurs in the Lynhaven section, along Long Creek, which empties into Lynhaven Bay and eventually Chesapeake Bay. In 1998 there were two active federally permitted dealers in this port that also operate as packing houses for two out of town dealers. The commercial fishery at Virginia Beach/Lynhaven is inlet-dependent and pressured by competition for waterfront space with tourist-related development and recreational boaters and fishers. There were 65 species landed in this area in 1998. The major gear type used is the sink gillnet, used to catch bluefish, striped bass, Atlantic croaker, summer flounder, shad, weakfish and spot. Drift and stake gillnets are also used. Gillnetting for dogfish was an important fishery before there were federal regulations in place to manage spiny dogfish.

In Lynhaven there are three centers of activity associated with packing houses and docking areas. The most extensive docking area is a predominantly recreational marina. There is a packing house owned by two local men. The commercial docks and the marina are owned by a corporation. In 1999, they were in the process of building a new packing house and increasing the number of recreational boat slips. There are also two small docks with packing houses in Lynhaven.

McCay and Cieri (2000), indicated that the Virginia Beach area was hostile toward commercial fishermen (based on one interview). This feeling may be due to the imposition of a new Virginia Beach gas tax that has impacted commercial fishermen since they use large amounts of fuel for their boats. Virginia Beach continues to grow as an area popular for summer tourism, putting pressure on waterfront land. Based on the report by McCay and Cieri (2000), one fisherman interviewed indicated that it is “hard to get and retain good crew members.” The results from this report (1988) indicated that fishermen mainly target spiny dogfish. Some fisheries have limited entries, or closed entries, which makes switching to other fisheries difficult.

3.3.3.9 Accomack County (includes Chincoteague and Wachapreague), Virginia

Chincoteague is a small Atlantic ocean port on the Delmarva peninsula, in Accomack County. There is little resident ocean fleet left, the sea clam vessels having been sold when the individual transferrable quotas (ITQs) came into being in 1990. There is one resident active dealer, and four out of town dealers, who use this dock as a packing house. Seasonally, trawlers and other fishermen come from other states to land their catches in Chincoteague, and there is a small local inshore and bay fishery as well as shellfish farming.

There are several packing houses in Chincoteague, including a small cooperative. According to McCay and Cieri (2000), there were 15 to 20 gillnet boats in 1999, all ranging in size from 20 to

30 feet in Chincoteague. There are also visiting trawlers from North Carolina. The packing houses used to handle thousands of pounds of fluke, but regulations on the summer flounder fishery put an end to the business. They now handle shellfish and farm raised oysters. They also sell some fluke, conch, and scallops that come in as bycatch.

In 1998, the commercial gillnet fishery represented 34.6 percent of the total pounds, and 19.8 percent of the total value, of the fish landed in Accomack County (Table 15). According to the 1990 census, Accomack County had a total population of 31,703 people, with 9.1 percent participating in agriculture, forestry, and fisheries. Retail was the largest employer at 18.7 percent, followed by manufacturing nondurable goods, at 15.3 percent. In 2000, the population of Accomack County had grown to 38,305 and only 982 people, or 5.9 percent of the population reported their occupation as farming, fishing, or forestry (Table 23). According to the 1990 Census, there were 25 fishing vessel captains or officers in Accomack County and there were 360 men and 12 women engaged in fishing as an occupation.

The visiting otter trawl fishery accounted for almost half of Chincoteague's 1998 landed value. summer flounder was the main species landed. There is a small drift gillnet fishery for striped bass, Atlantic croaker and other species and a large sink gill-net fishery that accounted for 27 percent of Chincoteague's value. This fishery mainly targets angler (monkfish), but also targets spiny dogfish. The 2000 census population data stated that 6.5 percent of Chincoteague's population claimed fishing as their occupation (Table 24).

3.3.3.10 Wachapreague, Virginia

According to the 1990 census, Wachapreague had 313 residents of whom only two reported their occupation as fishing, farming, or forestry (Table 25). The town is incorporated and has three marinas. Two of the marinas are privately owned and have a launching ramp, a bait and tackle shop, and a restaurant. The town owns a third marina, which also has a launching ramp. Once known as the flounder capital of the world, Wachapreague continues to be actively involved in recreational fisheries. Altogether the marinas provide over 100 slips, with between 40 and 50 private recreational fishing boats moored for the full season. A fish packing house is located next to the seawall, which provides dockage for four vessels owned by the packinghouse. Other businesses in town include a grocery store and hotel. Employment and commercial activity peak in the summer months. Most businesses rely on the participants in recreational fisheries for their principal earnings, and the commercial fisheries for a year-round trading base.

According to the 1998 NMFS landings data for Wachapreague, the landings were small, and landed mainly by fishermen who were gillnetting for horseshoe crabs and pot-fishing for conch and blue crabs. The commercial fisheries also have fishermen from the local area and other areas who fished for spiny and smooth dogfish, flounder, striped bass (rockfish), weakfish (sea trout), scup, black sea bass, mackerel, butterfish, blue crab, shad, quahogs and clams, conchs and whelks. Most vessels using the port facilities are reported to be less than 50 feet in length, and are operated by a skipper and a crew of two or three fishermen. In 1997, the Virginia Marine

Resources Commission reported that 19 commercial fishermen licensed by the VMRC made landings of inshore fish species in Wachapreague (McCay and Ceiri 2000).

In 1997, spiny dogfish comprised 65.2 percent of commercial landings by weight and 40.7 percent by value of all reported landings at Wachapreague. The packinghouse and its vessels employ some 20 persons. In 1999, residents reported that any change in the dogfish fishery will directly impact this community. It was predicted that when they lost the dogfish fishery, the community would lose a significant portion of its community based winter employment, and would have to rely on seasonal recreational fishery-related employment and businesses. The amount and type of species landed has changed due to new regulations in place for the dogfish fishery.

Wachapreague is an established community and recognizes its roots in fisheries and agriculture. The 1990 census shows that eight people were employed in farming, forestry, and fishing industries and five in farming, forestry or fishing occupations. Residents indicated that since a majority of fishermen are paid on a share basis, for tax purposes they are declared as self-employed. This is not reflected in the census. Approximately 70 percent of the working population earned income from sources other than the community's businesses. The businesses of the town are fishery-oriented. Recreational fishing is highly seasonal, and peak employment in Wachapreague may exceed 100 jobs at the height of the summer season. Some 20 percent of the community households depend on income earned from fishing related activities.

Table 22: Virginia Census Data. Source: Census Bureau 2000

Population in 1990	6,187,358	
Population in 2000	7,078,515	
Census Data from 2000	Number or Value	Percent
Sex		
Male	3,471,895	49.0
Female	3,606,620	51.0
Employment Status		
Population 16 and over in civilian labor force	3,563,772	64.4
Employed	3,412,647	61.7
Unemployed	151,125	2.7
Median family income	\$54,169.00	
Per capita income	\$23,975.00	
Occupation		
Farming, fishing, and forestry occupations	16,336	0.5
Industry		
Agriculture, forestry, fishing and hunting, and mining	43,425	1.3
Poverty Status in 1999: number below poverty level		
Families	129,890	7.0

Table 23: Accomack County, Virginia (includes the communities of Chincoteague and Wachapreague) Census Data. Source: Census Bureau 2000

Population in 1990	31,703	
Population in 2000	38,305	
Census Data From 2000	Number or Value	Percent
Sex		
Male	18,590	
Female	19,715	
Employment Status		
Population 16 and over in civilian labor force	17,983,	59.8
Employed	16,618	55.3
Unemployed	1,365	4.5
Median family income	\$34,82.00	
Per capita income	\$16,309.00	
Occupation		
Farming, fishing, and forestry occupations	982	5.9
Industry		
Agriculture, forestry, fishing and hunting, and mining	1,050	6.3
Poverty Status in 1999: number below poverty level		
Families	1,353	13.0

Table 24: Chincoteague, Virginia Census Data. Source: Census Bureau 2000

Population in 2000	4,317	
Census Data From 2000	Number or Value	Percent
Sex		
Male	2,096	48.6
Female	2,221	51.4
Employment Status		
Population 16 and over in civilian labor force	2,242	61.1
Employed	2,092	57.0
Unemployed	150	4.1
Median family income	\$33,425.00	
Per capita income	\$20,367.00	
Occupation		
Farming, fishing, and forestry occupations	137	6.5
Industry		
Agriculture, forestry, fishing and hunting, and mining	122	5.8
Poverty Status in 1999: number below poverty level		
Families	121	9.7

Table 25: Wachapreague, Virginia Census Data. Source: Census Bureau 2000

Population in 2000	236	
Census Data From 2000	Number or Value	Percent
Sex		
Male	110	46.6
Female	126	53.4
Employment Status		
Population 16 and over in civilian labor force	128	59.8
Employed	125	58.4
Unemployed	3	1.4
Median family income	\$39,063.00	
Per capita income	\$21,680.00	
Occupation		
Farming, fishing, and forestry occupations	2	1.6
Industry		
Agriculture, forestry, fishing and hunting, and mining	3	2.4
Poverty Status in 1999: number below poverty level		
Families	2	2.9

Table 26: Northhampton County, Virginia Census Data. Source: Census Bureau 2000

Population in 2000	13,093	
Census Data From 2000	Number or Value	Percent
Sex		
Male	6,126	46.8
Female	6,967	53.2
Employment Status		
Population 16 and over in civilian labor force	5,566	53.6
Employed	5,177	49.7
Unemployed	389	3.7
Median family income	\$35,034.00	
Per capita income	\$16,591.00	
Occupation		
Farming, fishing, and forestry occupations	341	6.6
Industry		
Agriculture, forestry, fishing and hunting, and mining	411	7.9
Poverty Status in 1999: number below poverty level		
Families	561	15.8

3.3.3.11 North Carolina

The 2000 census data states that 0.8 percent of North Carolina's population claims fishing as their occupation (Table 27). The North Carolina fisheries are highly diverse, exploiting the resources of the rich estuarine and inshore environments as well as the offshore areas along all of the Atlantic coast. The fishermen of North Carolina participate in a diversity of fisheries and must be adaptable to survive (McCay and Cieri 2000). North Carolina fishermen are also very mobile and move up and down the east coast to take part in fisheries off of Massachusetts, Connecticut, New York, New Jersey, and Virginia. The commercial fisheries of North Carolina are found in the coastal ports of Wanchese, on Roanoke Island, and Moorehead City, Beaufort, Ocracoke, and Hatteras on the Outer Banks.

According to the 1998 landings data, over 70 percent of the total value landed for the state was from the counties of Dare, Carteret, Hyde, Pamlico and Beaufort. Recreational fishing is a major entity in developed coastal areas such as Beaufort and Wanchese. In these five counties the average income from commercial fishing exceeded the average annual income for all workers (McCay and Cieri 2000).

Fishing is important to North Carolina's economy. In 1997, 228.5 million pounds of seafood were landed, which generated as many as 27,000 direct jobs in harvesting, processing, wholesale, retail, and food service (McCay and Cieri 2000).

According to a study by Johnson and Orbach (1996), who interviewed a sample of 388 people with commercial fishing licenses, most North Carolina commercial fishermen have highly diversified jobs, which often include construction or farming. Of the commercial fishermen surveyed, 96 percent were male, 97 percent were white, and 2.7 percent were black. The authors' study also showed that many of the rural areas have other family members (spouses, children, or parents) who are involved with fishing. Sixty-seven percent of the respondents indicated that their spouses worked part-time or full-time, outside of fishing. Respondents indicated that it was difficult to live on fishing alone and most fishermen are involved with fishing at various levels. Some fish primarily for personal consumption or recreation. The designation of full-time or part-time fishermen may be misleading. Many of the fishermen reported participating in other types of shore-based work. Fishermen in more isolated areas, such as the Albermarle area, Dare County, and the Pamlico area, depend upon fishing to provide 50 percent or more of their income. People who leave full-time fishing are likely to continue fishing at some level. In some areas, fishermen who left commercial fishing for other full-time jobs continue to shrimp, scallop, or fish as their schedule allows.

Research by Johnson and Orbach (1996) showed that most fishermen who were excluded from a particular fishery would switch to another fishery and others would try to find supplemental work or leave the fishing industry altogether. Results from this study show that the management and restrictions placed on various fisheries may prevent some people from being able to switch fisheries.

In North Carolina the principal ocean gillnet fishery is the sink gillnet fishery off Dare County. The main season is December to April, which accounts for about 80 percent of the annual sink gillnet trips in that area. From January 1994 to June 1996, Dare County sink gillnet trips accounted for 69 percent of the total state gillnet effort. Landings were dominated by dogfish. Other fisheries include striped bass, monkfish, bluefish, king mackerel, weakfish, and croaker. Vessels generally set a number of nets in an area and tend them in turn, depending on conditions. The nets are usually retrieved at the end of the day.

3.3.3.12 Dare County, North Carolina

Gillnets represented 37.1 percent of the pounds and 23.3 percent of the value of fish landed in Dare County (Table 15). According to the 1990 census, Dare County had a total population of 22,746. The population of the county had grown to 29,967 by 2000. According to the 2000 census, 543 people, or 3.5 percent, listed their occupation as farming, fishing, or forestry (Table 28).

The fishing communities of Wanchese and Nags Head are in Dare County. According to the 2000 census, 9.5 percent of the population of Wanchese listed their occupation as farming, fishing, or forestry. In Nags Head, 2.2 percent listed their occupation as farming, fishing, or forestry. For both communities the largest employment sector was in sales and office occupations.

3.3.3.13 Wanchese, North Carolina

Many of the families in Wanchese are related and the structure of the community has traditionally been based on a reliance on the commercial fishing industry. According to a study published in 1993 (MMS 1993), the harbor is full of trawlers and other fishing vessels. At that time, more than 20 million pounds of seafood were landed annually. The catch is either sold for consumption locally, or shipped via trucks and planes to other locations to places such as New York and Japan. Wanchese fishermen are described as “small, independent operators who generally own their own boats and gear and spend long, hard hours on the water” (MMS 1993).

In 1990, 20 percent of the community’s workers were employed in agriculture, forestry, or fishing, the highest of any coastal community in North Carolina. Recent studies indicate that this changed to 9.5 percent in 2000 (Table 29). Wanchese was fairly isolated from other areas until bridges and roads were built and before people owned telephones and televisions. Wanchese does not attract many tourists and is not a location that people pass through on the way to somewhere else. The community has not experienced as much growth in tourism and development as some of the surrounding communities, although there is increasing competition for natural resources in the area and land for development.

Wanchese has a long history of exploiting marine resources. Throughout the nineteenth century, the commercial fishing industry expanded. During that time almost all of the residents worked with the commercial fishing industry. Today the village still revolves around fishing but also has processing plants.

In 2000, there were 117 small businesses in Wanchese. Of those, 44 were commercial or charter fishing businesses (McCay and Cieri 2000). In 2000 there were seven families of seafood dealers in the seafood industrial park, which serves the estimated 200 fishing families who live in Wanchese, as well as fishermen from other areas. There are seafood packing houses for packing fish and other types of seafood. The Wanchese Seafood Industrial Park was constructed in 1980 by the state and is operated by the North Carolina Department of Commerce. The park has 30

acres of land for lease, a 15-acre harbor, and 1,500 feet of commercial concrete docks (McCay and Cieri 2000).

There are many important commercial species of fish landed in Wanchese and according to McCay and Cieri (2000), many respondents interviewed in 1998 emphasized how they have to be versatile to survive. Due to the weather and change in water temperature during the year, it is not possible to fish the same species all year round. There are a number of gillnet boats that switch over to charters in the summer.

According to the fishermen, it is getting more difficult to hire and retain crew. There is a high turnover rate for crews as fishermen switch to different fisheries, although, new management plans and regulations are making it more difficult for people to switch from one fishery to another. There is also competition for labor from the tourist trade which creates jobs in construction and building. According to McCay and Cieri's research (2000), several respondents reported that they knew of boats not fishing due to lack of crew. Crew that are available are often transients. Fishermen are often left searching for alternative ways to make a living. The wages they can make from the sea when the fishing is good can not be matched by jobs on land. Selling commercial boats is difficult as fishing revenues continue to decline. Some fishermen are leaving the fishing industry for carpentry and building for the tourist industry.

3.3.3.14 Hyde County, North Carolina

Fish caught using gillnets in 1998 represented 20.0 percent of the pounds of seafood landed, and 15.4 percent of the value for Hyde County (Table 15). According to the 2000 census, 206 or 9.2 percent of the residents make their living from farming, fishing, or forestry (Table 30). Although the county has a small population, 5,826 in 2000, it is the third largest fishing county of North Carolina with total landings for 1998 of over 16 million pounds with a value of almost 11 million dollars. The fishing centers of Hyde County include Swan Quarter, Engelhard, and Ocracoke. Fishermen exploit a variety of species and use an array of gear in the inshore and offshore fisheries. In 1998, blue crabs and fluke were the two most important species with regard to economic value.

According to research done by McCay and Cieri (2000), there were 80 to 90 small boats in Swan Quarter, which range in size from 25 to 35 feet. There were also 12 trawlers that were larger than 45 feet, which mostly fish for shrimp and bycatch of fish. Most fishermen fish close to shore and do not go out into the ocean. There are a number of fish houses which process shrimp, crab, oysters, and various species of fish that are often caught as bycatch by shrimp fishermen. Most of the shrimp fishermen lived in town, and most crew were also local.

In 1998, there were several fishermen using pound nets for croaker, butterfish, menhaden, weakfish, and Spanish mackerel in Ocracoke. Fishermen also gillnet for roe mullet. Crabbing is important to the community. The number of boats fishing out of Ocracoke varies with the season, ranging from four or five a day, to upwards of 30 to 40 per day. Most are smaller boats,

in the 20-28 foot range (McCay and Cieri 2000). Many of the fishermen who fish on Ocracoke also live there. One person who owns a seafood company said there was strong community support for fishing, and fishing was a draw for tourism. During the tourist season, April to November, there are 6 to 8 charter boats operating out of Ocracoke (McCay and Cieri 2000). Young people growing up on the island in fishing families may choose not to go into fishing, choosing to go to college or enter the work force in other fields. Fishermen can still make a living from fishing in the area but must be willing to work hard, fishing most days of the week. Most of Ocracoke's economy depends on seasonal tourism, and to a lesser degree, commercial fishing (MMS 1998).

Table 27: North Carolina Census Data. Source: Census Bureau 2000

Population in 1990	6,628,637	
Population in 2000	8,049,313	
Census Data from 2000	Number or Value	Percent
Sex		
Male	3,942,695	49.0
Female	4,106,618	51.0
Employment Status		
Population 16 and over in civilian labor force	4,039,732	64.2
Employed	3,824,741	60.8
Unemployed	214,991	3.4
Median family income	\$46,335.00	
Per capita income	\$20,307.00	
Occupation		
Farming, fishing, and forestry occupations	29,178	0.8
Industry		
Agriculture, forestry, fishing and hunting, and mining	61,185	1.6
Poverty Status in 1999: number below poverty level		
Families	196,423	9.0

Table 28: Dare County, North Carolina Census Data. Source: Census Bureau 2000

Population in 2000	29,967	
Census Data from 2000	Number or Value	Percent
Sex		
Male	15,098	50.4
Female	14,869	49.6
Employment Status		
Population 16 and over in civilian labor force	16,504	67.9
Employed	15,696	64.6
Unemployed	808	3.3
Median family income	\$49,302.00	
Per capita income	\$23,614.00	
Occupation		
Farming, fishing, and forestry occupations	543	3.5
Industry		
Agriculture, forestry, fishing and hunting, and mining	538	3.4
Poverty Status in 1999: number below poverty level		
Families	468	5.5

Table 29: Wanchese, North Carolina Census Data. Source: Census Bureau 2000

Population in 2000	1,527	
Census Data 2000	Number or Value	Percent
Sex		
Male	774	50.7
Female	753	49.3
Employment Status		
Population 16 and over in civilian labor force	799	66.6
Employed	777	64.8
Unemployed	22	1.8
Median family income	\$43,173.00	
Per capita income	\$17,492.00	
Occupation		
Farming, fishing, and forestry occupations	74	9.5
Industry		
Agriculture, forestry, fishing and hunting, and mining	64	8.2
Poverty Status in 1999: number below poverty level		
Families	23	5.1

Table 30: Hyde County, North Carolina Census Data. Source: Census Bureau 2000

Population in 1990	5,411	
Population in 2000	5,826	
Census Data 2000	Number or Value	Percent
Sex		
Male	3,080	52.9
Female	2,746	47.1
Employment Status		
Population 16 and over in civilian labor force	2,360	49.2
Employed	2,236	46.6
Unemployed	124	2.6
Median family income	\$35,558.00	
Per capita income	\$13,164.00	
Occupation		
Farming, fishing, and forestry occupations	206	9.2
Industry		
Agriculture, forestry, fishing and hunting, and mining	355	15.9
Poverty Status in 1999: number below poverty level		
Families	148	10.3

4.0 MANAGEMENT ALTERNATIVES

The environmental (biological, social, economic) consequences or impacts imposed by management measures can vary extensively and are, therefore, challenging to quantify or compare systematically to one another. Under NEPA, analysis of the consequences imposed by the alternative actions need to be compared and analyzed for potential negative or positive impacts. The social, economical, and biological communities need to be addressed concurrently. Furthermore, consequences of management alternatives need to address cumulative effects.

The impacts of each Alternative introduced in Section 2 are discussed separately in the following subsections in the context of the relevant statute (i.e., MMPA, ESA, NEPA), the objectives of the BDTRP and amendments to the final mid-Atlantic large mesh gillnet rule (67 FR 71895). The economic impacts of each Alternative are briefly summarized in the following sections but are described in more detail in the Regulatory Impact Review in section 5.

It is expected that each of the Alternatives will benefit coastal bottlenose dolphins, as well as other marine mammals and sea turtles that are present in the area and subject to fishery interactions. Non-marine mammal species known to be affected by the nine fisheries discussed in this EA include the target fish species by gear. The environmental effects of the various gears on targeted species are not analyzed specifically in this document; however, the Alternatives are analyzed for any positive or negative impacts. Overall, it is expected that the Alternatives will also benefit target species because they include gear restrictions that will reduce effort and landings.

Alternatives other than the seven analyzed in this EA were considered by the BDTRT and NMFS but were rejected as they did not meet the objectives of the BDTRP. These were to regulate inside waters within 0.5 nmi or 1 km, 1.07 nmi or 2 km, and 2.15 nmi or 4 km from shore, as well the EEZ. NMFS determined that these parameters did not merit further detailed analysis at this time. NMFS believes that managing additional waters outside of the bottlenose dolphin stock's current peak distribution, waters where sea turtle interactions with fishery gear are not likely, or in areas where NMFS lacks scientific information, are not warranted to meet the objectives of this action based on available information.

Other variables evaluating the Alternatives analyzed for this EA were discussed in the following studies:

- (1) Palka (2002; 1-23-02p) modeled the relationship between gear characteristics, fishing practices, and bycatch of coastal bottlenose dolphins. Palka evaluated a suite of variables to determine if correlations existed with increased takes of dolphins during observed gillnet hauls from November 1995 to October 2000. One of these variables included soak duration. Soak time did not have as strong of a correlation as other variables.

(2) To analyze soak time with specific fisheries, Palka (2002; 2-27-02 r) evaluated bycatch rates for the striped bass fishery in Virginia and North Carolina if hauls soaked for less than 24 hours. Using data from 1995-2000, NMFS determined that the bycatch rate did not significantly change when the soak time restriction applied. Therefore, reducing soak times without any other gear restrictions was not anticipated to reduce bycatch levels to below PBR.

(3) Palka (2002; 1-23-02 p) also evaluated twine size as a gillnet gear characteristic that could be correlated with dolphin bycatch rates. Twine size was most highly correlated with the presence of takes. The dolphin bycatch rate had a positive correlation with twine size, and since twine size is related to mesh size, it was difficult to determine which factor had a greater effect on takes.

(4) NMFS to estimate the effect of a minimum and maximum twine size on a specific fishery rather than looking at all gillnet fisheries. This research was conducted to test the hypothesis that a stiffer net (maximum twine size) has a lower incidental bycatch rate of bottlenose dolphins. NMFS evaluated the impact of the bycatch rate associated with restricting kingfish hauls in North Carolina to twine sizes of less than 0.70 mm (0.02 in). NMFS determined that the predicted bycatch rates would not likely be reduced to below PBR (2002; 2-27-02n). For example, the reduction in bycatch predicted in the North Carolina portion of the Winter Mixed Management Unit was only 0.2 percent. Ninety-nine percent of the observed kingfish hauls already used twine sizes less than 0.70 mm (0.02 in).

(5) NMFS to what extent the predicted bycatch rate would be decreased if fishermen targeting spiny dogfish fishing in North Carolina and Virginia were prohibited from setting gillnets overnight and were prohibited from using gillnet gear greater than 1,200 feet (366 m), 1,500 feet (457 m), or 1,800 feet (549 m) in length. NMFS (2002; 2-27-02 q) determined that the bycatch rate would decrease for the Winter Mixed Management Unit in North Carolina; however, the rate of reduction was not statistically significant for the 1,200 feet (366 m), 1,500 feet (457 m), or 1,800 feet (549 m) restrictions. Since the gear length maximums did not result in statistically significant declines in the four management units examined, this option was not considered for further analysis.

(6) Although coastal bottlenose dolphins and sea turtles are known to occur in both federal waters and state waters, including bays, sounds, and estuaries, NMFS currently lacks sufficient dolphin bycatch and stock status information to justify developing take reduction measures for fisheries operating in inside waters. For the purposes of this EA, inside waters include all waters landward of the first bridge over any embayment, harbor, or inlet or all waters landward of the 72 Federal Collision Regulations (COLREGS) line in instances where there is no bridge over the embayment or harbor close to the mouth of the embayment or harbor, as in the case of Delaware Bay, except where specifically needed and noted in the BDTRP. Bridges are used instead of COLREGS lines to

delineate the inside waters in part because the bridges are further inshore than the COLREGS lines, and are therefore, a more conservative boundary.

(7) NMFS reviewed the value of managing the entire EEZ across the full range of the coastal bottlenose dolphin stock. However, this area was not included in any of the alternatives because it would generate an undue burden on the fisheries without sufficient benefit(s) to the coastal bottlenose dolphin stock. Areas beyond the 6.5 nmi (12 km) and 14.6 nmi (27 km) distributional range of the coastal morphotype were considered to have occurrences of the coastal bottlenose dolphin too infrequent to have a substantial effect on reducing bycatch from requiring gear restrictions in this area. Moreover, the majority of the fisheries operate as day-fisheries without using the full extent of the EEZ.

Therefore, the Alternatives analyzed in Section 4 include six viable options for reduced dolphin bycatch, and a status quo option (Alternative 1). These Alternatives, except Alternative 1, analyze a combination of gear area restrictions for state waters in Florida, Georgia, South Carolina, North Carolina, Virginia, Maryland, Delaware, and New Jersey. Alternatives 2-7 also include area restrictions for federal waters out to 14.6 nmi (27 km) in Florida, Georgia, and South Carolina, and seasonal restrictions for North Carolina and Virginia state waters. The non-regulatory measures are applicable to all the Alternatives, except Alternative 1.

In developing the Alternatives, several assumptions were made: (1) there would be no shift in effort from one management unit to another, or from one fishery to another; (2) current fishing practices would not change (number of nets used, the number of fishermen participating in the fishery, type of gear used, and general time and area of gear deployment); and (3) since bycatch rates were calculated from effort and gear type, if any gear characteristics were to change, bycatch would also change (4-1-03 g; Palka and Rossman 2004). It should also be noted that the total landings in North Carolina used for this analysis is incomplete (with respect to a particular fishery, water body, county, and month) due to North Carolina confidentiality laws. Furthermore, because of the complexities of the management measures and limitations of available data, the analytical approach was to assume that the resultant harvest effort for the respective gillnet fisheries would either be 100 percent (no change) or 50 percent (a 50 percent reduction) of the 2001 fishing season level. In all of the Alternatives analyzed, predicted bycatch estimates for gillnet fisheries were predicted as the number of bottlenose dolphin taken when a simulated potential mitigation measure was in effect. The bycatch rate was, therefore, calculated as the number of bottlenose dolphins per amount of landings and a predicted level of effort (landings). The bycatch rate due to an alternative measure was estimated by using the data that were analyzed in the report by Palka and Rossman (2001) and updated, as indicated in each table, by Palka and Rossman (2004 and 2005). In each table, under each Alternative, the predicted PBR is based on no change or 50 percent reduction in landings and is compared to the total mortality of coastal bottlenose dolphins. The total mortality and serious injury of coastal bottlenose dolphins is equal to the predicted bycatch estimate for ocean gillnets plus beach seine gillnets.

In analyzing Alternatives 2, 6, and 7 below in relation to the proposed amendment to the final mid-Atlantic large mesh gillnet rule, the environmental consequences for these Alternatives are unchanged from the effects of the monkfish fishery previously analyzed in the following: the various status reviews, stock assessments, and recovery plans for the sea turtle species; the final environmental impact statement for the listing of the green, loggerhead, and olive ridley sea turtles (NMFS, 1978); the supplement to that final environmental impact statement (NMFS 1987); the FMP and its final environmental impact statement dated October 1999; the ESA section 7 consultation on the monkfish FMP in 2001; the Final Framework Adjustment to the Monkfish FMP developed in 2002; the biological opinion on the revised FMP completed on May 14, 2002; and the November 2002, EA for the original rule. Detailed reference citations for these documents are located at the end of this document.

Gear Marking

The BDTRT noted the importance of gear marking as an enforcement tool and a tool for obtaining additional bycatch information in each of the fisheries affected by this action. Gear marking would not specifically reduce the bycatch of bottlenose dolphins and sea turtles, but the BDTRT believed gear marking would facilitate enforcement of the BDTRP and potentially aid in linking entanglements to specific fisheries if dolphins strand with marked gear attached. Thus, all the Alternatives, except the Preferred Alternative, evaluated for this action include the following gear marking requirements and costs associated with marking gear.

The BDTRT only discussed gear marking for gillnet fisheries. Discussions included marking gillnets with an 18-inch diameter ball buoy at one end of the net and an 8-inch diameter ball buoy at the opposite end of the gillnet; but specific gear marking requirements were not agreed upon by BDTRT members. Because specifics were not agreed upon, and marking with 18-inch ball buoys is inconsistent with other state gear marking requirements and would cause undue economic burden on the fishermen, NMFS evaluated gillnet gear marking to include a square flag or 8-inch ball buoy on both ends of the net (See Appendix 6 for States' Current Gear Marking Requirements).

NMFS also evaluated gear marking requirements to include a unique identification tag, made of plastic or metal, to be permanently attached at each end of the net and along the float line, as close to the float line as operationally feasible, every 300 feet (91.4 m). The identification tag would bear the owner's last name, gear mesh size, and either the state motorboat registration number, state commercial fishing license number, or U.S. Coast Guard documentation number.

NMFS also evaluated implementing a requirement to mark gear in the North Carolina long haul seine fishery, mid-Atlantic haul/beach seine fishery, and North Carolina roe mullet stop net fishery. Gear marking requirements for these fisheries include the identification tag described above.

NMFS also evaluated other possible gear marking requirements for the Atlantic blue crab pot/trap fishery and Virginia pound net fishery. Atlantic blue crab pot/trap fishermen are currently required to mark the surface buoy, which is at least 5-inches (12.7 cm) in diameter, with an identification number contrasting in color to the buoy. Requiring additional tagging with the unique identification tags discussed above would cause an undue economic burden on the mid-Atlantic crab pot/trap fishermen because of the current gear marking requirements. Virginia pound net fishermen are also currently required to mark the holding stake or pole with a unique identification tag. Since there are already other state and federal gear marking requirements in place for these fisheries, NMFS does not believe additional information regarding an entanglement of a dolphin is likely to be obtained from requiring gear marking under the BDTRP.

Gear marking for all the fisheries affected by this action was evaluated for each of the Alternatives, except for the Preferred Alternative. Of the nine fisheries affected, gear marking for the blue crab pot/trap fishery would impose the greatest burden on the fishing community. For each of the Alternatives analyzed, burden hours increase from an estimated maximum of 240,000 hours to a potential of over three million hours, while gear marking apparatus costs increase from a maximum of \$692,000 to potentially greater than \$8 million. However, these estimates are likely an overestimate, since the majority of the gear marking requirements are already imposed by other FMPs and state regulations, with the exception of marking gillnets.

4.1 ALTERNATIVE 1 - No-Action Alternative

The No-Action Alternative would retain all existing management measures, without any change or enacting additional measures, including current FMPs and policies associated with the nine commercial fisheries detailed in Section 3.3.2. The No-Action Alternative would not implement any additional requirements or restrictions on the nine commercial fisheries that currently interact with bottlenose dolphins.

The No-Action Alternative would also maintain the current final mid-Atlantic large mesh gillnet rule published in the *Federal Register* on December 3, 2002. Restrictions would only apply to the EEZ for large-mesh gillnets greater than 8-inches (20.3 cm) stretched mesh. NMFS would have no management measures in place in state waters to address sea turtle takes and mortality, and there would be no regulatory structure to manage the fishery and prevent or reduce illegal takings of listed species in state waters, other than the prosecution of individual fishermen.

4.1.1 Biological Impacts

The No-Action Alternative, or Status Quo, would retain all existing management measures without any change; thus, the No-Action Alternative does not meet the MMPA's required bycatch reduction goals for the Summer Northern North Carolina Management Unit and the Winter Mixed Management Unit, which are above PBR. The No-Action Alternative also would not offer greater bycatch reduction for those management units that still do not meet the long-

term goal of the MMPA to reduce serious injury and mortality of marine mammals incidentally taken in the course of commercial fishing operations to insignificant levels approaching a zero mortality and serious injury rate with 5 years of implementation. Additionally, this Alternative would not implement any of the Consensus Recommendations made by the BDTRT for reducing interactions of bottlenose dolphins with commercial fishing gear.

Currently, the existing FMPs and state/federal policies and regulations do not provide adequate bycatch reduction for bottlenose dolphins or sea turtles. This conclusion is supported by the determination that the current levels of fishery associated mortality and serious injury exceed PBR for bottlenose dolphins, as detailed in Section 3.2.2.1.4, Table 2. The bycatch level for Alternative 1 is expected to remain similar to past levels and dolphin bycatch would continue to remain above PBR in the Summer Northern North Carolina and Winter Mixed Management Unit (Table 31) and may rise. Without additional conservation measures, the purpose and need for this action would not be met.

Table 31: Alternative 1 in Comparison to PBR and Actual Bycatch in the Year 2000. The bycatch estimate is equal to the sum of the predicted bycatch estimate for ocean gillnet plus beach seine gillnets.

Seasonal Management Unit	PBR	Actual Bycatch ¹ in the Year 2000	Alternative 1 Predicted Mortality Estimate: No-Action or Status Quo
SUMMER			
Northern migratory	73	30	36
Northern North Carolina	20	29	26 ²
Southern North Carolina	9.9	0	0
WINTER			
Mixed Stock	68	151	65 ³
ALL YEAR			
South Carolina	20	Unknown	Unknown
Georgia	17	Unknown	Unknown
Northern Florida	3.3	0	Unknown
Central Florida	74	4	Unknown

This Table was based primarily on documents 4-1-03 g and 4-1-03 x (see Appendix 3); however, it was updated based on Palka and Rossman (2004). (Shaded cells denote bycatch at PBR, below PBR, or unknown.).

¹2000 bycatch estimates are actual, whereas, the other estimates are predicted.

²Mortality estimate includes the average estimated mortality of 3 animals attributed to beach-based gillnets (Palka and Rossman 2004).

³Mortality estimate includes the average estimated mortality of 4 animals attributed to beach-based gillnets (Palka and Rossman 2004).

The No-Action Alternative would also not amend the current regulations in the final mid-Atlantic large mesh gillnet rule. It would not provide consistency in large mesh gillnet restrictions among federal and state regulations for large mesh gillnets along the mid-Atlantic and would not make it easier for commercial fishermen complying with various large mesh regulations in the mid-Atlantic. Specifically, not revising the large mesh size restriction would create confusion in large mesh definitions amongst the existing Harbor Porpoise Take Reduction Plan, the North Carolina Department of Marine Fisheries regulations, and this action to implement the BDTRP.

NMFS believes this Alternative would not result in additional adverse impacts to fish species beyond that currently affected through existing fishery management plans. This Alternative may result in additional impacts to protected species including bottlenose dolphins, whales, and sea turtles. This Alternative would likely have the greatest impact to fish, sea turtles, and other marine mammal species, of all the Alternatives considered.

Compared to the other Alternatives, this Alternative would provide the least conservative protection for dolphins, and is expected to result in the highest number of bycatch of dolphins. NMFS did not chose this Alternative as its Preferred Alternative because it would not provide sufficient bycatch reduction in all bottlenose dolphin management units to meet the statutory requirements of the MMPA. It would also not alleviate any potential confusion in the large mesh definitions between state and federal regulations.

4.1.2 Effects on Existing Fisheries and Communities

For a detailed discussion of the fishery and fishing community impacts, see the Regulatory Impact Review, Social Impact Assessment and Initial Regulatory Flexibility Act Analysis discussion in Sections 5.0-7.0.

Under the No-action Alternative, there would be no direct short-term impacts on the fishermen, families, or communities in the Atlantic coastal communities since this would not change current fishing practices. However, if actions are not taken now to reduce the bycatch of bottlenose dolphins and potential takes of sea turtles, it may be necessary to take more aggressive measures at a later date to protect the species. If more aggressive actions are warranted in the future to protect the bottlenose dolphin stock and sea turtles, then there may be added costs, loss of employment, or other changes in fishing practices, which may lead to longer-term impacts on the fishing community structure. More severe management measures would likely impose more significant economic and social impacts than those associated with the Alternatives currently under consideration. The full extent of these additional impacts, however, cannot be assessed at this time since the more restrictive measures have not been specified.

Continued mortality through bycatch in the oceanic gillnet fisheries may represent significant economic loss to the public, as well as businesses dependent upon non-consumptive interactions with the species. Foregone or delayed measures to reduce bycatch of bottlenose dolphins risks the imposition of costs to society through the potential decline of species that are highly valued by the public. If conservation measures are delayed, it may be more difficult for the species to recover in the future.

4.1.3 Cumulative Effects on Existing Fisheries and Communities

Because this Alternative would not impose any additional direct impacts on existing fisheries or fishing communities, there would be no additional cumulative effects on existing fisheries and fishing communities.

4.1.4 Consistency with Other Plans and Policies for Existing Fisheries and Communities

By approving this Alternative, NMFS would not be implementing any of the recommendations of the BDTRT. As a result, the requirements of the MMPA would not be met. NMFS would not improve the likelihood of reducing the incidental takes of bottlenose dolphins by commercial fisheries to levels below PBR, as mandated by the MMPA. Implementing the No-action Alternative would also not provide consistency in large mesh gillnet size restrictions among state and federal regulations or ease for commercial fishermen who must comply with these regulations.

4.1.5 Mitigation Measures for Effects on Existing Fisheries and Communities

By implementing the No-Action Alternative, NMFS would not impose additional impacts on the existing fisheries and communities. Therefore, no mitigation measures would be necessary.

4.2 ALTERNATIVE 2 - Proposed Rule

This Alternative would implement fishing gear modification and gear marking requirements as detailed in Table 32. It would also amend the mid-Atlantic large mesh gillnet rule to extend seasonally-adjusted closures into North Carolina and Virginia state waters and revise the large mesh gillnet size restriction to include gillnets with mesh sizes of 7-inches (17.8 cm) stretched mesh or larger, as detailed in Table 33 and Figure 2.

Under this Alternative, NMFS would implement all the BDTRT's recommendations except the following: (1) the requirement for mandatory bycatch certification training (outreach and education workshops would be conducted but would not be mandatory); and (2) a requirement to haul gear once every 24 hours in the small mesh gillnet fisheries in the Winter Mixed-North Carolina and the Summer Northern North Carolina Management Units.

The BDTRT recommended that vessel operators and persons in non-vessel fisheries complete a mandatory bycatch certification training program. NMFS believes that a mandatory certification program is unnecessary at this time and that the potential costs of holding and ensuring participation at the workshops would outweigh the bycatch reduction benefits. Alternatively, NMFS is proposing to provide outreach and education to the fishing industry through the non-regulatory measures identified in Section 2.1.2.

NMFS does not support implementing the requirement to haul gear once every 24 hours in the small mesh gillnet fisheries in the ranges of the Winter Mixed and the Summer Northern North Carolina Management Units. NMFS analyzed fishery data and found that 98 percent of the observed hauls soaked for less than 24 hours. Additionally, this requirement would be difficult to enforce because it would be difficult to accurately ascertain the length of time that gear remains in the water, unless enforcement agents monitor the gear for a 24 hour period. NMFS

instead plans to highlight gear-tending practices during workshop training and in outreach materials.

Table 32: Alternative 2: Modified BDTRT Regulatory Recommendations

Management Unit	Fishing Area	Gillnet Mesh Size Requirements (Stretch Mesh)		
		Small (≤ 5 in)	Medium (>5 in to <7 in)	Large (≥ 7 in)
Summer Northern Migratory	NJ - VA	None	Jun. 1-October 31: Anchored gillnets-fishermen must remain within 0.5 nmi (0.93 km) of the closest portion of each gear fished at night in state waters, and any gear fished at night must be brought back to port with vessel.	Jun. 1-October 31: Anchored gillnets - fishermen must remain within 0.5 nmi (0.93 km) of the closes portion of each gear fished at night in state waters, and any gear fished at night must be brought back to port with vessel. ¹
Winter Mixed - Virginia	Cape Charles Light to VA/NC border			November 1-December 31: no fishing at night in state waters, and, at night, gear must be removed from the water and stowed on board the vessel before the vessel returns to port. ¹
Summer Northern North Carolina AND Winter Mixed - Northern North Carolina	VA/NC border to Cape Lookout	May 1-October 31: Net length must be less than or equal to 1,000 feet (304.8 m).	November 1-April 30: No fishing at night in state waters; sunset clause of 3 years for this restriction.	April 15-December 15: No fishing at night in state waters. ¹ December 16-April 14, no fishing at night in state waters without tie-downs. ¹

<p>Summer Southern North Carolina AND Winter-Mixed Southern North Carolina</p>	<p>Cape Lookout to NC/SC border</p>	<p>None</p>	<p>November 1-April 30: No fishing at night in state waters; sunset clause of 3 years for this restriction.</p>	<p>April 15-December 15: No fishing at night in state waters.¹</p> <p>December 16-April 14: No fishing at night in state waters, and, at night, gear must be removed from the water and stowed on board the vessel before the vessel returns to port.¹</p>
<p>South Carolina, Georgia, Northern Florida, and Central Florida</p>	<p>SC, GA, and FL</p>	<p>Year-round: All gillnet gear: Fishermen must remain within 0.25 nmi (0.46 km) of the closest portion of their gear at all times in state and federal waters within 14.6 nmi (27 km) from shore. Gear must be removed from the water and stowed on board the vessel before the vessel returns to port.</p>		
<p>Beach Gear</p>				
<p>Summer Northern and Southern North Carolina; Winter Mixed</p>	<p>NC coast-wide</p>	<p>Year-round: No person fishing in a Category I or II fishery may fish with a net within 300 feet (91.4 m) of the beach/water interface unless it consists of multi-fiber nylon (no type of monofilament material) that is 4 inches (10.2 cm) or less stretched mesh.</p>		

Gear Marking Requirements for all Fisheries (except Virginia Pound Net and Atlantic Blue Crab Trap/Pot Fisheries)

<p>All</p>	<p>NJ - central FL</p>	<p>Year-round: Gear marking requirements apply to all regulated and exempted waters, as defined in §229.35 (c)(1) and (c)(2) in the regulatory text of the proposed rule (69 FR 65127) published on November 10, 2004. All fishermen participating in Category I or II fisheries affected by this rule (except Atlantic blue crab trap/pot and Virginia pound net fisheries, which already have gear marking requirements) must permanently mark their gear with identification tags containing the last name and first and middle initials of the owner, gear mesh size, and one of the following: state vessel registration number, U.S. Coast Guard documentation number, or state commercial fishing license number. These identification tags, made of plastic or metal, must be attached along the float line, as close to the float line as operationally feasible, at least once every 300 feet (91.4 m). For gillnet gear, in addition to the identification tags, gear must be marked on the end flag or ball by using engraved flag(s) or ball buoy(s), or by attaching engraved metal or plastic tags to the flag(s) and ball buoy(s). One end of the net must be marked by a square flag not less than 144 square inches (929.03 square cm) and at least 3 feet (0.91 m) above the water. The opposite end of the net must also be marked by a square flag or an 8-inch (20.32 cm) minimum diameter ball buoy with the gear mesh size. Both flag(s) and ball buoy(s) must be marked with at least two stripes of reflective material that are not less than 2 inches (5.08 cm) in width and that are visible for 360 degrees.</p>
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¹ Large mesh gillnets have additional restrictions for sea turtle and bottlenose dolphin protection under the amendments for the mid-Atlantic large mesh gillnet rule, as identified in Table 33.

Table 33: Alternative 2 - Summary of measures to amend the mid-Atlantic large mesh gillnet rule to include seasonally-adjusted closures with conditional striped bass exemption and revise large mesh size requirement to 7-inch (17.8 cm) or greater stretched mesh.

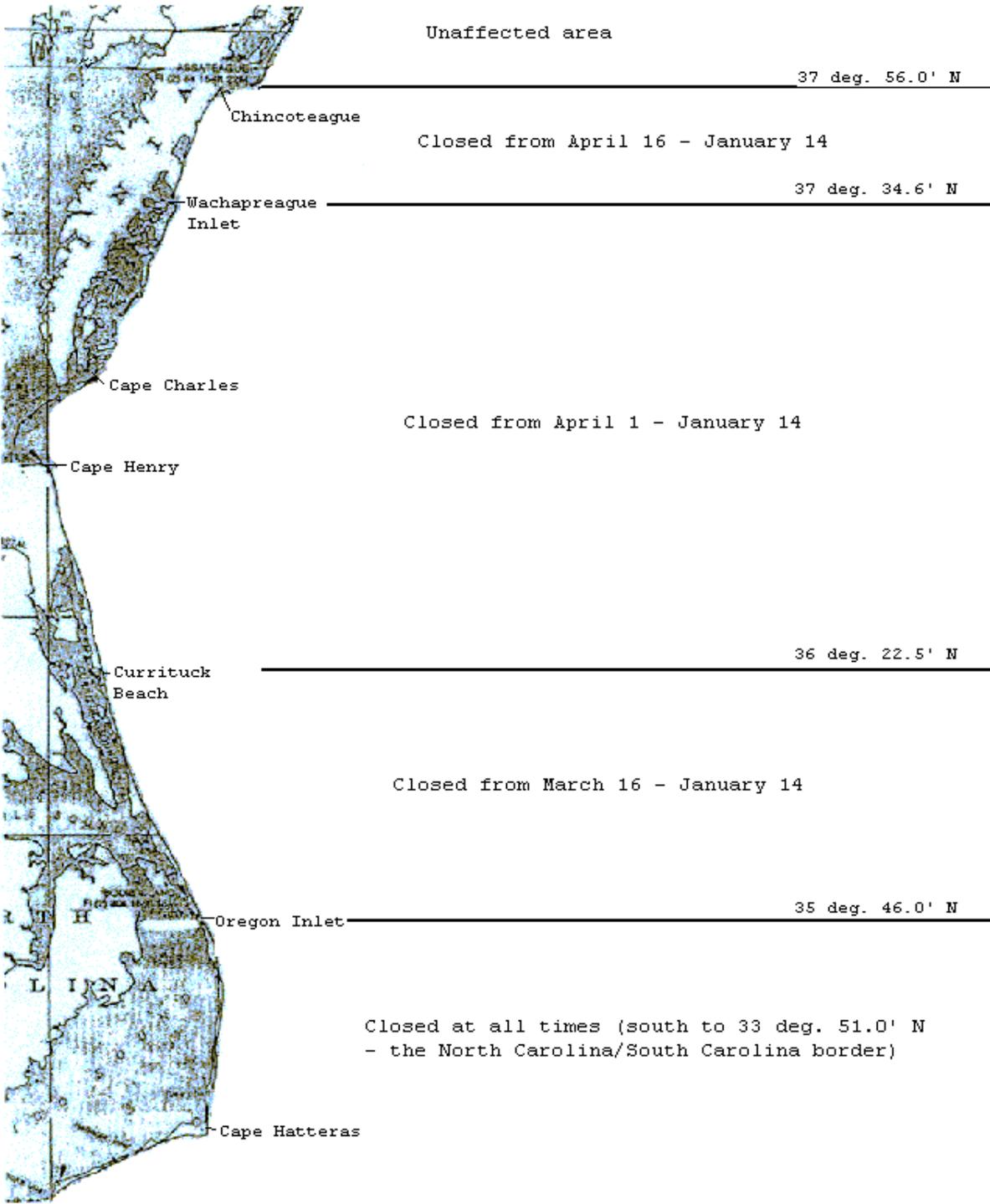
Nearshore and Offshore Waters	Large Mesh Gillnet (7 inch Stretched Mesh)	Corresponding BDTRP Management Area
North of 37°34.6' N (Wachapreague Inlet, Virginia) and south of 37° 56.0' N (Chincoteague, Virginia)	No Fishing from April 16-January 14	Northern Virginia portion of Summer Northern Migratory and Winter Mixed Stock
North of 36°22.5' N (Currituck Beach Light, North Carolina) and south of 37°34.6' N (Wachapreague Inlet, Virginia)	No Fishing from April 1-January 14	Southern Virginia portion of the summer Northern Migratory and Winter Mixed Stock
North of 35° 46.0' N (Oregon Inlet) and south of 36°22.5' N (Currituck Beach Light, North Carolina)	No fishing from March 16-January 14	Northern North Carolina
North of 33° 51.0' N (North Carolina/South Carolina border at the coast) and south of 35° 46.0' N (Oregon Inlet) at any time	No fishing at any time	Southern North Carolina and Southern half of Northern North Carolina
<p>Conditions: <i>For the above nearshore and offshore waters, during the above-specified time periods: No person may fish with (including, but not limited to, setting, hauling back, or leaving in the ocean), or possess on board a vessel, any gillnet with a stretched mesh size of 7-inches (17.8 cm) or larger, unless all gillnets are covered with canvas or other similar material and lashed or otherwise securely fastened to the deck or the rail, and all buoys larger than 6-inches (15.24 cm) in diameter, high flyers, and anchors are disconnected.</i></p>		

Exemptions: *Fishermen are exempt from these conditions when targeting striped bass with large mesh gillnets in state waters if: gillnet gear is less than or equal to 1,000 feet (312.5 m) in length; and the vessel remains within 0.25 nautical mile (0.46 km) of the net at all times.*

In North Carolina waters, the exemption only applies during the North Carolina large mesh gillnet striped bass open season as specified by proclamation of the director of the North Carolina Division of Marine Fisheries.

In Virginia waters, the exemption only applies to those fishermen targeting striped bass and possessing valid ocean striped bass quota tags, issued by the Virginia Marine Resources Commission, aboard the vessel during the Virginia striped bass open season.

Figure 2: Seasonally adjusted closures in state and federal waters [COLREGS - 200 nautical miles offshore] to minimize interactions between large-mesh gillnet gear and threatened or endangered sea turtles.



4.2.1 Biological Effects

This Alternative is expected to reduce bycatch of the bottlenose dolphin stock (within all management units) to levels below PBR (Table 34) and reduce the potential for incidental capture of sea turtles in North Carolina and Virginia state waters. However, based on new information submitted to NMFS during the public comment period and subsequent analyses, NMFS believes extending the seasonally-adjusted closures into North Carolina and Virginia state waters is not necessary to meet objectives of the BDTRP (Palka and Rossman 2005). Additionally, conservation benefits for sea turtles resulting from implementing this Alternative would be less than those from implementing Alternative 7 (Preferred Alternative) because the Virginia Marine Resources Commission (VMRC) enacted state regulations that offer more conservation benefit by virtually eliminating some large mesh fishing in state waters. The North Carolina Department of Marine Fisheries is also developing management measures that will provide equal to or greater protection than the federally-proposed measures.

Alternative 5 would provide the most conservation benefit for dolphins and sea turtles because it completely eliminates all gillnet fishing in state waters. Alternatives 4 and 3, respectively, provide the second and third greatest bycatch reduction potential for management units. Compared to the Preferred Alternative, this Alternative and Alternatives 3, 4, and 5 would likely provide more conservation benefits to finfish and other marine mammal species because these alternatives require fishing restrictions and would reduce effort and landings overall.

Table 34: Alternative 2 in Comparison to PBR and Actual Bycatch in the Year 2000. The mortality estimate is equal to the sum of the predicted bycatch estimate for ocean gillnets plus beach seine gillnets.

Seasonal Management Units	PBR	Actual Bycatch ¹ in the Year 2000	Alternative 2 Predicted Mortality Estimate
SUMMER			
Northern migratory	73	30	29 (or 36)
Northern North Carolina	20	29	15 (or 19) ²
Southern North Carolina	9.9	0	0
WINTER			
Mixed Stock	68	151	57 (or 61) ³
ALL YEAR			
South Carolina	20	Unknown	Unknown
Georgia	17	Unknown	Unknown
Northern Florida	3.3	0	Unknown
Central Florida	74	4	Unknown

This Table was based primarily on documents 4-1-03 g and 4-1-03 x (see Appendix 3); however, it was updated based on Palka and Rossman (2004). (Shaded cells denote bycatch at PBR, below PBR, or unknown).

¹2000 bycatch estimates are actual, whereas, the other estimates are predicted. Columns with an estimate in parentheses means a range of effort was explored, usually 50% (and 100%) of the effort (landings) as reported in 2001.

²Mortality estimate includes the average estimated mortality of 3 animals attributed to beach-based gillnets (Palka and Rossman 2004).

³Mortality estimate includes the average estimated mortality of 4 animals attributed to beach-based gillnets (Palka and Rossman 2004).

4.2.2 Effects on Existing Fisheries and Communities

For a detailed discussion of the fishery and fishing community impacts, see the Regulatory Impact Review, Social Impact Assessment and Initial Regulatory Flexibility Act Analysis discussion in Sections 5.0-7.0.

As a result of the measures contained in this Alternative, participants in the oceanic gillnet fisheries in Delaware-Maryland-New Jersey are projected to experience reductions of up to 8 percent in total harvests and 11 percent in total ex-vessel revenues. Participants in North Carolina are projected to experience reductions in harvests and ex-vessel revenues of not more than 2 percent. Virginia participants in the winter fishery are projected to experience the greatest potential impact with reduction in harvests of up to 6 percent and ex-vessel revenues of 14 percent. Total harvest reductions across all areas and fishery sectors are estimated at 855,000 pounds with an ex-vessel value of \$1.009 million. This represents 5.32 percent of oceanic gillnet harvests and 10.4 percent of ex-vessel revenue, and 1.78 percent of total harvests by these participants and 2.57 percent of ex-vessel value. These reductions range from no impact in some fisheries/areas, to over 10 percent in others (the Delaware-Maryland-New Jersey summer northern medium and large mesh gillnet fisheries and the Virginia Winter Mixed large mesh gillnet fishery). The proposed universal gear marking requirements in this Alternative are projected to cost \$578,000-\$692,000 for marking apparatus and \$1.006-\$2.402 million in time/labor expenses if gear has not been previously marked; however, most state laws already require gear to be marked. Hence, the only additional cost would be the cost of an identification tag every 100 yards in each of the gillnet fisheries and North Carolina seine fisheries. The following calculations are based on mean gear lengths according to Steve et al. (2001), numbers of participants (based on the 2003 List of Fisheries), and the number of nets used by participants according to NMFS commercial fisheries liaison. It is anticipated that these tags would cost approximately \$1.10 per tag. Therefore, the total cost (including labor) associated with gear marking for the entire mid-Atlantic gillnet fishery is estimated to be \$0-\$1,781,485 (Appendix 4).

Due to the limited amount of information available on fishing communities in the mid-Atlantic, it is not possible to predict with certainty what impact these recommendations would have on the fishermen, fishing dependent businesses, and the communities where these fishermen and businesses reside and conduct business. A total of 3,079 entities were identified as having recorded landings in the 2001 fishing season using gillnet gear in North Carolina through New Jersey. It is unknown, however, how many individuals, family units, other businesses, etc., are encompassed by these entities and associated businesses and communities.

The projected harvest and revenue reductions may have varying impacts on the fishermen, fishing-dependent businesses, and the fishing communities depending on the specific amount of the reduction in harvest for a respective fishery, and the relative importance of that harvest to overall harvest activity for those fishermen and respective businesses and communities.

The analysis for this EA assumes that fishermen would not shift from one fishery to another as new regulations are imposed. However, fishermen may in fact adapt to the new regulations by changing the way in which they fish, or switch to another fishery, if feasible, to continue to make the same amount of income from fishing. New restrictions on the way people fish may force some fishermen to seek other types of employment to supplement their income. Some fishermen may choose to leave the industry altogether for a new profession if it is not economically feasible

to change their current fishing practices, or they cannot switch to another fishery. Obviously, changes to the amount of fish harvested, or changes in the number of fishermen involved in a particular fishery, would have impacts on the people in fishing dependent businesses and on the fishing communities. Such movements, however, cannot be predicted at this time. It should be noted that as fishermen continue to be subjected to an increasingly restrictive regulatory environment, they face an increasingly limited set of options for relocation to other fisheries or modification of their fishing behavior.

Besides the increased costs associated with the gear marking, it is expected that a limited amount of time would be lost in marking gear. This may have additional significant societal or community impacts, as it could result in lost fishing time. The loss of fishing time may result in a loss of potential revenue, time employed in other jobs, or time spent pursuing other activities around the home, with their families, with others in the community, or other activities that define the quality of one's life. It is expected that the majority of time required to mark gear would occur at the onset and a minimal time for inspecting and repairing the gear would be associated with the new marking requirement. Further, NMFS believes that implementing gear marking requirements would create additional requirements which are unnecessary since all the states already require some form of gear marking. NMFS believes there would be no measurable conservation benefits to either bottlenose dolphins or sea turtles due to gear marking requirements specified in this Alternative.

The intent of this Alternative is to reduce the mortality and serious injury of the western North Atlantic coastal bottlenose dolphin stock that are incidentally caught in commercial fisheries, from New Jersey to Florida, to below PBR and to reduce the potential take of federally protected sea turtles from large mesh gillnets in North Carolina and Virginia state waters. Any reduction of harm to these resources would be a positive step towards preservation of these species and of marine biodiversity. However, based upon review of all the public comments and the summary notes of the last BDTRT meeting held during the public comment period of the proposed rule, this Alternative would not incorporate the most current analysis of bottlenose dolphin and sea turtle interaction rates in North Carolina and Virginia state waters. Also, NMFS agrees with the public comments received that this Alternative would not allow for the consideration of the current gear marking requirements of the individual states affected by this plan. Additionally, NMFS believes this Alternative would create an additional economic burden on the fishing community even with a six month implementation delay for gear marking.

4.2.3 Cumulative Effects on Existing Fisheries and Communities

In general, fishermen continue to be faced with an increased burden of fishing restrictions and fewer opportunities to enter new fisheries. Although departure from fishing as a profession need not always lead to economic loss because the personal decision to fish is often a lifestyle decision and not an economic decision, there is, however, a cumulative burden of stress, loss of individual choice or self-direction, and social disruption at the individual and community level. While it is unknown how many entities would be forced to cease fishing as a result of this Alternative, the

imposition of additional regulations on even those who manage to continue fishing contributes to an increasingly difficult work environment that would logically manifest into all facets of fishermen's lives and communities. The Reasonably, Foreseeable, Future Actions (RFFAs) for this Alternative, and all others, were identified and are detailed in the cumulative effects section for the Preferred Alternative.

NMFS did not chose this Alternative as its Preferred Alternative for the following reasons based on public comments regarding the proposed beach gear and gear marking requirements under the BDTRP and concerns regarding the extension of the seasonally-adjusted closures under the amendments to the mid-Atlantic large mesh gillnet rule, as well as additional information received:

(1) NMFS is pursuing activities to further investigate appropriate measures to address beach gear and nearshore gillnet fisheries in the future because: (1) the proposed measures for beach gear would inadvertently impact nearshore gillnet and other commercial fishermen that were not intended to be regulated by the BDTRT Consensus Recommendations; (2) a review of the most recent serious injury and mortality estimates provided by Palka and Rossman (2005) suggests that the proposed measures for beach gear are not currently necessary to reduce bottlenose dolphin serious injury and mortality to below PBR; and (3) NMFS believes additional information is necessary regarding the level of serious injury and mortality in both beach gear and nearshore gillnet fisheries and possible measures to reduce this serious injury and mortality.

(2) It is not currently necessary to extend the Federal closures into State waters, as the Federal regulations would be redundant to the newly developing state regulations without added conservation benefits. Furthermore, additional analysis was conducted that included updated state management measures, which indicated that the extension of the seasonally-adjusted closures as proposed was not necessary to reduce bycatch of dolphins to below PBR (Palka and Rossman, 2005). Specifically, changes to the Federal monkfish fishery resulted in a number of North Carolina gillnetters obtaining permits to operate in Federal waters instead of being limited to State waters. Thus, NMFS expects the fishing in North Carolina State waters may decrease. Additionally, NCDMF began developing state management measures for large mesh gillnet fisheries that will provide protection to sea turtles similar to the proposed Federally-imposed closures of State waters. The Virginia Marine Resources Commission (VMRC) provided data showing that the state quota tag system implemented following the drafting of the proposed rule reduced striped bass large mesh gillnetting effort by upwards of 60 percent. Finally, following publication of the proposed rule, VMRC implemented regulations to further manage large mesh gillnets in State waters and to eliminate monkfish gillnetting, the fishery of primary concern in terms of sea turtle bycatch.

(3) It is not currently necessary to implement the gear marking measures proposed in this Alternative because the states' affected by this action currently maintain sufficient gear

marking requirements to meet NMFS' primary purpose of proposing the gear marking requirements, which was for enforcement of the BDTRP. Implementing the gear marking requirements outlined in this Alternative would be redundant to the states' current gear marking requirements and cause an undue burden on commercial fishermen.

4.2.4 Consistency with Other Plans and Policies for Existing Fisheries and Communities

This Alternative would meet the requirements of the MMPA, and therefore, the objectives of the BDTRP, by reducing bottlenose dolphin bycatch to below the stock's PBR. It would also provide consistency in large mesh gillnet regulations amongst the BDTRP, Harbor Porpoise Take Reduction Plan, and North Carolina state regulations. However, this Alternative does not provide consistency in gear marking requirements amongst all the states affected by the BDTRP. It also does not consider new regulations imposed by VMRC to reduce incidental mortality and serious injury of bottlenose dolphins and sea turtles. Enacting this Alternative would create conflicting and unnecessary regulations.

4.2.5 Mitigation Measures for Effects on Existing Fisheries and Communities

This Alternative would allow a 6 month implementation delay for gear marking requirements and any fishermen required to change their net webbing material. NMFS would also continue funding cooperative gear research projects to test innovative gear modification ideas that may reduce bycatch of dolphins and sea turtles, while allowing fishermen to maintain catch effort. As with the other Alternatives, except the No-Action Alternative, NMFS would continue to consult with the BDTRT to ensure the plan is effective. The BDTRT would meet regularly after the BDTRP has been implemented to ensure it is still meeting its objectives without causing undue harm to commercial fisheries, as well as to review any new data. NMFS would also continue to monitor the coastal bottlenose dolphin stock and sea turtle populations to detect any increases or decreases. Additionally, regular meetings with the BDTRT would ensure continued commercial fishermen involvement in all aspects of the plan's continued development to meet its objectives and its implementation.

4.3 ALTERNATIVE 3 - Prohibit gillnets within 3 km of shore in all seasonal management units and require gear marking.

Under this Alternative, gillnet gear would be prohibited within 3 km from shore in all management units, thereby reducing the amount of gillnet gear in nearshore waters. Fishermen would also be required to mark their gear (as detailed in Table 32, Section 4.2) to assist with enforcement and gear identification should an interaction occur.

4.3.1 Biological Effects

Prohibiting gillnets within 3 km from shore is anticipated to provide the third greatest bycatch reduction potential when compared to the other six Alternatives. Alternative 3 would reduce

bycatch in all eight management units. Although, this Alternative reduces bottlenose dolphin bycatch to below PBR or unknown levels for most management units (Table 35), it would only meet PBR, with the potential for exceedence, for the Summer Northern North Carolina management unit. When compared to this Alternative, Alternatives 4 and 5 would likely provide more conservation benefits because they are anticipated to reduce bottlenose dolphin takes below PBR in all management units, and Alternative 5 even approaches an insignificant and serious injury rate.

NMFS believes this Alternative would not create additional adverse impacts to finfish, sea turtles, or other marine mammals because it would prohibit gillnets within 3 km from shore and may benefit most species by eliminating these gear type, and consequently, decreasing effort and landings. However, it is impossible to predict if a shift in effort for target species would occur and how this may affect finfish, sea turtles, or marine mammals outside of 3 km from shore.

Table 35: Alternative 3 in Comparison to PBR and Actual Bycatch in the Year 2000. The Bycatch Estimate is equal to the sum of the predicted bycatch estimate for ocean gillnet plus beach seine gillnets.

Seasonal Management Units	PBR	Actual Bycatch ¹ in the Year 2000	Alternative 3 Predicted Mortality Estimate: Prohibit gillnets within 3km
SUMMER			
Northern migratory	73	30	17 (or 30)
Northern North Carolina	20	29	20 (or 38) ²
Southern North Carolina	9.9	0	0
WINTER			
Mixed Stock	68	151	28 (or 50) ³
ALL YEAR			
South Carolina	20	Unknown	Unknown
Georgia	17	Unknown	Unknown
Northern Florida	3.3	0	Unknown
Central Florida	74	4	Unknown

This Table was based primarily on documents 4-1-03 g and 4-1-03 x (see Appendix 3); however, it was updated based on Palka and Rossman (2004). (Shaded cells denote Bycatch at PBR, below PBR, or unknown).

¹2000 bycatch estimates are actual, whereas, the other estimates are predicted. Columns with an estimate in parentheses means a range of effort was explored, usually 50% (and 100%) of the effort (landings) as reported in 2001.

²Mortality estimate includes the average estimated mortality of 3 animals attributed to beach-based gillnets (Palka and Rossman 2004).

³Mortality estimate includes the average estimated mortality of 4 animals attributed to beach-based gillnets (Palka and Rossman 2004).

NMFS chose against using Alternative 3 as its Preferred Alternative because it did not reduce bycatch of bottlenose dolphins to below PBR in the Summer Northern North Carolina management unit. Additionally, this Alternative more financial burden when compared to the Preferred Alternative, and all other alternative, except Alternative 5.

4.3.2 Effects on Existing Fisheries and Communities

For a detailed discussion of the fishery and fishing community impacts, see the Regulatory Impact Review, Social Impact Assessment and Initial Regulatory Flexibility Act Analysis discussion in Sections 5.0-7.0.

This Alternative is projected to reduce the average annual harvest from state oceanic waters by 7.79 mp and reduce ex-vessel revenues by \$4.04 million. As with the previous Alternative, due to the limited amount of information on fishing communities in the mid-Atlantic, it is not possible to predict how many fishermen and others involved with the fishing industry would be impacted by this Alternative. A total of 3,079 entities were identified as having recorded landings in the 2001 fishing season using gillnet gear in North Carolina through New Jersey. It is unknown, however, how many individuals, family units, other businesses, etc., are encompassed by these entities and associated businesses and communities. The loss in ex-vessel revenue, however, is 300 percent greater than that expected to result from the Preferred Alternative and, thus, would be expected to produce significantly greater adverse impacts on fishermen and fishing communities.

The analysis for this BDTRP assumes that fishermen would not shift from one fishery to another as new regulations are imposed. However, fishermen may in fact adapt to the new regulations by changing the way in which they fish or switching to another fishery, if feasible, to continue to make the same amount of income from fishing. New restrictions on the way people fish may force some fishermen to seek other types of employment to supplement their income. Some fishermen may choose to leave the industry altogether for a new profession if it is not economically feasible to change their current fishing practices, or they cannot switch to another fishery. Obviously, changes to the amount of fish harvested, or changes in the number of fishermen involved in a particular fishery, would have impacts on the people in fishing dependent businesses and on the fishing communities. Such movements, however, cannot be predicted at this time. As fishermen continue to be subjected to an increasingly restrictive

regulatory environment, they face an increasingly limited set of options for relocation to other fisheries or modification of their fishing behavior.

Besides the increased costs associated with the gear marking apparatus, which may contribute to an inability to continue to participate in the fishery, time spent in marking gear may have even more significant societal or community impacts. This is the case because it could be time spent fishing, resulting in a loss of potential revenue, time employed in other jobs, or time spent pursuing other activities around the home, with their families, with others in the community, or other activities that define the quality of one's life.

The intent of this Alternative is to reduce the mortality and serious injury of bottlenose dolphins incidentally caught in commercial fisheries to below PBR. Any reduction of harm to this resource would have a positive impact on preservation of these species and marine biodiversity. The impacts of such benefits on fishing communities, however, cannot be quantified.

4.3.3 Cumulative Effects on Existing Fisheries and Communities

In general, fishermen continue to be faced with an increased burden of fishing restrictions and fewer opportunities to enter new fisheries. Although departure from fishing as a profession need not always lead to economic loss because the personal decision to fish is often a lifestyle decision and not an economic decision, there is, however, a cumulative burden of stress, loss of individual choice or self-direction, and social disruption at the individual and community level. While it is unknown how many entities would be forced to cease fishing as a result of this Alternative, the imposition of additional regulations on even those who manage to continue fishing contributes to an increasingly difficult work environment that would logically manifest into all facets of fishermen's lives and communities. The Reasonably, Foreseeable, Future Actions (RFFAs) for this Alternative, and all others, were identified and are detailed in the cumulative effects section for the Preferred Alternative.

4.3.4 Consistency with Other Plans and Policies for Existing Fisheries and Communities

NMFS would not meet the requirements of the MMPA by implementing this Alternative because it does not reduce bottlenose dolphin bycatch below PBR for the Summer Northern North Carolina Management Unit. This Alternative is contrary to NEPA requirements, as it would create a greater economic impact on the human community when compared to other Alternatives and without the conservation benefits of some of those Alternatives. This Alternative is also contrary to the recommendations of the BDTRT and would not provide consistency in current state and federal large mesh gillnet size restrictions.

Alternative 3 poses a greater potential economic impact on commercial fisheries and expands the geographic scope of the BDTRT recommendations to include additional mesh sizes and time/area closures. NMFS believes that a complete prohibition on gillnet fishing within 3 km,

throughout the entire range of the dolphin stock, is overly burdensome to fishermen and inadequately protective of bottlenose dolphins.

4.3.5 Mitigation Measures for Effects on Existing Fisheries and Communities

If this Alternative were implemented, the mitigation measures for the effects on existing fisheries and communities would contain, at a minimum, those detailed in the Preferred Alternative mitigation section. This Alternative would cause greater economic hardship to existing fisheries and communities than all other Alternatives, except Alternative 5. Therefore, NMFS may reconvene the BDTRT specifically to develop appropriate mitigation to offset the increased economic hardships. For example, NMFS additional cooperative gear research may be conducted and an implementation delay for the requirements.

4.4 ALTERNATIVE 4 - Allow gillnet fishing in state waters for no more than 12 consecutive hours (either night or day for entire season) in all seasonal management units and require gear marking.

Under this Alternative, in state waters from New Jersey through Florida, gillnet gear (where allowed under existing fishery management plans as described in Section 3.3.2) would be allowed for half of the 24-hour cycle. In addition, all nine fisheries must mark their gear as detailed in Table 32, Section 4.2.

4.4.1 Biological Effects

Alternative 4, following Alternative 5, results in the second largest bycatch reduction benefit (Table 36), however, it still has the potential for estimated mortality to exceed PBR in the Summer Northern North Carolina Management Unit. The bottlenose dolphin bycatch reduction potential from this Alternative was developed under the following assumptions, as detailed in Palka and Rossman (2004):

- This Alternative prohibits fishing gear for 12 continuous hours within a specified 24-hour period; and
- The effect of this Alternative on fishing effort in landings (effort) within the state waters for the 12 hours when fishing was permitted: (1) all of the state landings observed in 2001; or (2) 50 percent of the state landings observed in 2001.

The mortality estimates in Table 37 would be a biased low if fishing effort increases due to the implementation of this Alternative. However, fishing effort is not likely to increase or shift to federal waters, rather the effort may shift to those 12 consecutive hours in which fishing would be permitted in state waters. No additional impact is expected to sea turtles or other marine mammals. This Alternative would reduce bycatch to levels at or below PBR or Unknown for all management units (Table 37), however, it has the potential to exceed PBR for the Summer Northern North Carolina Management Unit if effort increases.

Table 36: Alternative 4 in Comparison to PBR and Actual Bycatch in the Year 2000. The bycatch estimate is equal to the sum of the predicted bycatch estimate for ocean gillnet plus beach seine gillnets.

Seasonal Management Units	PBR	Actual Bycatch ¹ in the Year 2000	Alternative 4 Predicted Bycatch Estimates: Allow Fishing 12 out of 24 hours ²
SUMMER			
Northern migratory	73	30	8 (or 12)
Northern North Carolina	20	29	13 (or 24) ³
Southern North Carolina	9.9	0	0
WINTER			
Mixed Stock	68	151	20 (or 35) ⁴
ALL YEAR			
South Carolina	20	Unknown	Unknown
Georgia	17	Unknown	Unknown
Northern Florida	3.3	0	Unknown
Central Florida	74	4	Unknown

This Table was based primarily on documents 4-1-03 g and 4-1-03 x (see Appendix 3); however, it was updated based on Palka and Rossman (2004). (Shaded cells denote bycatch at PBR, below PBR, or unknown).

¹2000 bycatch estimates are actual, whereas, the other estimates are predicted. Columns with an estimate in parentheses means a range of effort was explored, usually 50% (and 100%) of the effort (landings) as reported in 2001.

² 12 out of 24: fishing was allowed for 12 consecutive hours within a 24-hour time period.

³Mortality estimate includes the average estimated mortality of 3 animals attributed to beach-based gillnets (Palka and Rossman 2004).

⁴Mortality estimate includes the average estimated mortality of 4 animals attributed to beach-based gillnets (Palka and Rossman 2004).

NMFS is not implementing Alternative 4 as its Preferred Alternative because it would not sufficient bycatch reduction to meet the MMPA statutory goals for PBR levels for the Summer Northern North Carolina Management Unit. This Alternative would also create a greater expense to the fisheries and fishing communities compared to the Preferred Alternative and Alternative 2 or 6. Finally, Alternative 4 does not include the recommendations of the BDTRT.

4.4.2 Effects on Existing Fisheries and Communities

For a detailed discussion of the fishery and fishing community impacts, see the Regulatory Impact Review, Social Impact Assessment and Initial Regulatory Flexibility Act Analysis discussion in Sections 5.0-7.0.

This Alternative is projected to reduce the average annual harvest from state oceanic waters by 5.62 mp and reduce ex-vessel revenues by \$3.18 million. As with the previous Alternative, due to the limited amount of information on fishing communities in the mid-Atlantic, it is not possible to predict how many fishermen and others involved with the fishing industry would be impacted by this Alternative. A total of 3,079 entities were identified as having recorded landings in the 2001 fishing season using gillnet gear in North Carolina through New Jersey. It is unknown, however, how many individuals, family units, other businesses, etc., are encompassed by these entities and associated businesses and communities. The loss in ex-vessel revenue, however, is 215 percent greater than that expected to result from the Preferred Alternative and, thus, would be expected to produce significantly greater adverse impacts on the fishermen and fishing communities.

This Alternative would impose a significantly greater burden on fishermen than the Preferred Alternative as a result of the additional gear marking requirements for the blue crab fishery. Burden hours increase from an estimated maximum of 240,000 hours under the Preferred Alternative to a potential of over 3 million hours, while gear marking apparatus costs increase from a maximum of \$692,000 under the Preferred Alternative to potentially greater than \$8 million. As with the Preferred Alternative, the increased costs associated with the gear marking apparatus increase the likelihood that continued operation in the fishery may not be economically feasible. The increased time burden spent in marking gear also further increases the potential likelihood of significant societal or community impacts due to the diminished flexibility to devote this time to fishing, resulting in a loss of potential revenue, and time devoted to other jobs, as well as pursuing other activities around the home, with one's families or others in the community, or pursuing other activities that define the quality of one's life.

The analysis for this BDTRP assumes that fishermen would not shift from one fishery to another as new regulations are imposed. However, fishermen may in fact adapt to the new regulations by changing the way in which they fish, or switch to another fishery, if feasible, to continue to make the same amount of income from fishing. New restrictions on the way people fish may force some fishermen to seek other types of employment to supplement their income. Some fishermen may choose to leave the industry altogether for a new profession if it is not economically feasible to change their current fishing practices, or if they cannot switch to another fishery. Obviously, changes to the amount of fish harvested, or changes in the number of fishermen involved in a particular fishery, would have impacts on the people in fishing dependent businesses and on the fishing communities. Such movements, however, cannot be predicted at this time. It should be noted, however, that as fishermen continue to be subjected to an increasingly restrictive

regulatory environment, they face an increasingly limited set of options for relocation to other fisheries or modification of their fishing behavior.

The intent of this Alternative is to reduce the serious injury and mortality of bottlenose dolphins incidentally caught in commercial fisheries to below PBR within six months of BDTRP implementation. Any reduction of harm to these resources would be a positive impact on preservation of these species and marine biodiversity. The impacts of such benefits on fishing communities, however, cannot be quantified.

4.4.3 Cumulative Effects on Existing Fisheries and Communities

In general, fishermen continue to be faced with an increased burden of fishing restrictions and fewer opportunities to enter new fisheries. Although departure from fishing as a profession need not always lead to economic loss because the personal decision to fish is often a lifestyle decision and not an economic decision, there is, however, a cumulative burden of stress, loss of individual choice or self-direction, and social disruption at the individual and community level. While it is unknown how many entities would be forced to cease fishing as a result of this Alternative, the imposition of additional regulations on even those who manage to continue fishing contributes to an increasingly difficult work environment that would logically manifest into all facets of fishermen's lives and communities. The Reasonably, Foreseeable, Future Actions (RFFAs) for this Alternative, and all others, were identified and are detailed in the cumulative effects section for the Preferred Alternative.

4.4.4 Consistency with Other Plans and Policies for Existing Fisheries and Communities

NMFS would not meet the requirements of the MMPA by implementing this Alternative because it does not reduce bottlenose dolphin bycatch below PBR for the Summer Northern North Carolina Management Unit. This Alternative is contrary to NEPA requirements, as it would create a greater economic impact on the human community when compared to other Alternatives and without the conservation benefits of some of those Alternatives. This Alternative, in comparison to the Preferred Alternative and Alternative 2 or 6, creates a greater economic impact on the fishing industry. This Alternative is also contrary to the recommendations of the BDTRT and would not provide consistency in current state and federal large mesh gillnet size restrictions.

4.4.5 Mitigation Measures for Effects on Existing Fisheries and Communities

Alternative 4 would create less economic hardships to existing fisheries and communities when compared to Alternatives 3 and 5. However, it still imposes a greater economic impact than the Status Quo, and Alternatives 2 and 6, and the Preferred Alternative. If this Alternative were implemented, the mitigation measures for the effects on existing fisheries and communities would contain, at a minimum, those detailed in the Preferred Alternative mitigation section. Therefore, NMFS may reconvene the BDTRT specifically to develop appropriate mitigation to

offset the increased economic hardships. For example, NMFS additional cooperative gear research may be conducted and an implementation delay for the requirements.

4.5 ALTERNATIVE 5 - Prohibit gillnet fishing in state waters, year-round, in all seasonal management units and require gear marking.

Under this Alternative, gillnet gear would be prohibited in all state waters (except waters inside the COLREGS lines) year-round. This Alternative would eliminate all gillnet fishing in state waters from New Jersey through North Carolina, as South Carolina, Georgia, and Florida already maintain prohibitions on gillnets in state waters. Gear marking would also be required under this Alternative for all affected fisheries.

4.5.1 Biological Effects

Compared to the other Alternatives, Alternative 5 provides the greatest biological benefits to the coastal bottlenose dolphin stock by reducing bycatch to below PBR in all management units and approaching insignificant mortality and serious injury rates (Table 37). It would also benefit other marine species, such as sea turtles and finfish, because gillnet gear generally be eliminated in state waters, as the majority of bycatch occurs in state waters. Consequently, effort and landings would also decrease. It is, however, impossible to predict if and how a shift in effort or shift in target species would impact finfish, sea turtles, or marine mammals outside of state waters.

Table 37: Alternative 5 in Comparison to PBR and Actual Bycatch in the Year 2000. The bycatch estimate is equal to the sum of the predicted bycatch estimate for ocean gillnet plus beach seine gillnets.

Seasonal Management Units	PBR	Actual Bycatch ¹ in the Year 2000	Alternative 5 Predicted Bycatch Estimates: Prohibit Gillnets in State Waters ²
SUMMER			
Northern migratory	73	30	4
Northern North Carolina	20	29	3 ³
Southern North Carolina	9.9	0	0
WINTER			
Mixed Stock	68	151	5 ⁴
ALL YEAR			
South Carolina	20	Unknown	Unknown
Georgia	17	Unknown	Unknown
Northern Florida	3.3	0	Unknown
Central Florida	74	4	Unknown

This Table was based primarily on documents 4-1-03 g and 4-1-03 x (see Appendix 3); however, it was updated based on Palka and Rossman (2004). (Shaded cells denote Bycatch at PBR, below PBR, or unknown).

¹2000 bycatch estimates are actual, whereas, the other estimates are predicted.

²No State: fishing prohibited in state waters.

³Mortality estimate includes the average estimated mortality of 3 animals attributed to beach-based gillnets (Palka and Rossman 2004).

⁴Mortality estimate includes the average estimated mortality of 4 animals attributed to beach-based gillnets (Palka and Rossman 2004).

NMFS is not implementing Alternative 5 as its Preferred Alternative because it is at great expense to the fisheries and fishing communities compared to the Preferred Alternative and all other Alternatives, except the No-Action Alternative. It is also does not reflect the recommendations of the BDTRT.

4.5.2 Effects on Existing Fisheries and Communities

For a detailed discussion of the fishery and fishing community impacts, see the Regulatory Impact Review, Social Impact Assessment and Initial Regulatory Flexibility Act Analysis discussion in Sections 5.0-7.0.

This Alternative is projected to reduce the average annual harvest from state oceanic waters by 16.63 mp and reduce ex-vessel revenues by \$9.71 million. As with the previous Alternative, due to the limited amount of information on fishing communities in the mid-Atlantic, it is not possible to predict how many fishermen and others involved with the fishing industry would be impacted by this Alternative. A total of 3,079 entities were identified as having recorded landings in the 2001 fishing season using gillnet gear in North Carolina through New Jersey. It is unknown, however, how many individuals, family units, other businesses, etc., are encompassed by these entities and associated businesses and communities. The loss in ex-vessel revenue, however, is 861 percent greater than that expected to result from the Preferred Alternative and, thus, would be expected to produce significantly greater adverse impacts on the respective participants and fishing communities, particularly since the fishery would be eliminated entirely.

This Alternative would impose a significantly greater burden on fishermen than under the Preferred Alternative and it is possible that the reduction in landings and the ability to target species would force the fishing community to either target offshore species with different gear, switch effort to beach-based gillnets, or switch occupations.

The analysis for the BDTRP assumes that fishermen would not shift from one fishery to another as new regulations are imposed. However, fishermen may in fact adapt to the new regulations by changing the way in which they fish or switching to another fishery, if feasible, to continue to make the same amount of income from fishing. New restrictions on the way people fish may force some fishermen to seek other types of employment to supplement their income. Some fishermen may choose to leave the industry altogether for a new profession if it is not economically feasible to change their current fishing practices, or if they cannot switch to another fishery. Obviously, changes to the amount of fish harvested, or changes in the number of fishermen involved in a particular fishery, would have impacts on the people in fishing dependent businesses and on the fishing communities. Such movements, however, cannot be predicted at this time. It should be noted, however, that as fishermen continue to be subjected to an increasingly restrictive regulatory environment, they face an increasingly limited set of options for relocation to other fisheries or modification of their fishing behavior.

The intent of this Alternative is to reduce the serious injury and mortality of bottlenose dolphins incidentally caught in commercial fisheries to below PBR. Any reduction of harm to these resources would be a positive impact in preservation of these species and of marine biodiversity. The impacts of such benefits on fishing communities, however, cannot be quantified.

4.5.3 Cumulative Effects on Existing Fisheries and Communities

In general, fishermen continue to be faced with an increased burden of fishing restrictions and fewer opportunities to enter new fisheries. Although departure from fishing as a profession need not always lead to economic loss because the personal decision to fish is often a lifestyle decision and not an economic decision, there is, however, a cumulative burden of stress, loss of individual choice or self-direction, and social disruption at the individual and community level. While it is unknown how many entities would be forced to cease fishing as a result of this Alternative, the imposition of additional regulations on even those who manage to continue fishing contributes to an increasingly difficult work environment that would logically manifest into all facets of fishermen's lives and communities. The Reasonably, Foreseeable, Future Actions (RFFAs) for this Alternative, and all others, were identified and are detailed in the cumulative effects section for the Preferred Alternative.

4.5.4 Consistency with Other Plans and Policies for Existing Fisheries and Communities

By implementing this Alternative, NMFS would meet the requirements of the MMPA by reducing bottlenose dolphin bycatch below PBR and approaching an insignificant mortality and serious injury rate. However, NEPA requirements mandate that the BDTRP take into account the economics of the affected fisheries and the recommendations of the BDTRT. This Alternative, in comparison to the Preferred Alternative and Alternative 2 or 6 (which incorporate the BDTRT's recommendations), creates a greater economic impact on the fishery and does not reflect the recommendations of the BDTRT.

4.5.5 Mitigation Measures for Effects on Existing Fisheries and Communities

Should NMFS implement this Alternative, the mitigation measures for the effects on existing fisheries and communities would contain, at a minimum, those detailed in the Preferred Alternative mitigation section. This Alternative may cause economic hardship on existing fisheries and communities, in a manner similar to Alternative 3. Therefore, NMFS might choose to reconvene the BDTRT specifically to develop appropriate mitigation to offset the increased economic hardships. For example, NMFS may choose to conduct additional cooperative gear research and/or to delay the onset of requirements.

4.6 ALTERNATIVE 6 - BDTRT Draft BDTRP

Under this Alternative, all the BDTRT's Consensus Recommendations would be enacted, including gear marking, mandatory bycatch training for fishermen, and including the seasonally-adjusted closures under the mid-Atlantic large mesh gillnet rule (67 FR 71895) into the Winter Mixed Northern North Carolina Management Unit. Gillnets, haul seines, and stop nets would be restricted by mesh size, proximity requirements, and/or time/area restrictions as described in Table 38.

Table 38: Alternative 6: BDTRT Regulatory Recommendations, including sea turtle conservation measures for the Winter Northern North Carolina Management Unit.

Management Unit	Fishing Area	Gillnet Mesh Size Requirements (Stretch Mesh)		
		Small (5 in)	Medium (> 5 in to < 7 in)	Large (7 in)
Summer Northern Migratory	NJ - VA	None	Jun. 1-Oct. 31: Anchored gillnets- fishermen must remain within 0.5 nmi (0.93 km) of the closest portion of each gear fished at night in state waters, and any gear fished at night must be brought back to port with vessel.	Jun. 1-Oct. 31: Anchored gillnets- fishermen must remain within 0.5 nmi (0.93 km) of the closest portion of each gear fished at night in state waters, and any gear fished at night must be brought back to port with vessel.
Winter Mixed - Virginia	Cape Charles Light to VA/NC border	None	None	November 1-December 31: no fishing at night in state waters, and at night, gear must be removed from the water and stowed on board the vessel before the vessel returns to port.

<p>Summer Northern North Carolina AND Winter Mixed Northern North Carolina</p>	<p>VA/NC border to Cape Lookout</p>	<p>May 1-October 31: Net length must be less than or equal to 1,000 feet (304.8 m).</p> <p>September 1-April 30: In state water, gear must be hauled at least once in 24 hours.</p>	<p>November 1-April 30: No fishing at night in state waters; sunset clause of 3 years.</p>	<p>April 15-December 15: No fishing at night in state waters.</p> <p>November 1-April 30: No fishing at night in state waters with gillnets without tie-downs.</p> <p>Extend the amended mid-Atlantic large mesh gillnet regulations into state waters, except for nets less than or equal to 1,000 feet (304.8 m) and in which fishers remain within 0.25 nmi (0.46 km) proximity of the closest portion of each gear set.</p>
<p>Summer Southern North Carolina AND Winter Mixed Southern North Carolina</p>	<p>Cape Lookout to NC/SC border</p>	<p>September 1-April 30: in state water, gear must be hauled at least once in 24 hours.</p>	<p>November 1-April 30: No fishing at night in state waters; sunset clause of 3 years for this restriction.</p>	<p>April 15-December 15: No fishing at night in state waters.</p> <p>November 1-April 30: No fishing at night in state waters, and, at night, gear must be removed from the water and stowed on board the vessel before the vessel returns to port.</p>
<p>South Carolina, Georgia, Northern Florida, and Central Florida</p>	<p>SC, GA, and FL</p>	<p>Year-round for all gillnet gear: Fishermen must remain within 0.25 nmi (0.46 km) of the closest portion of their gear at all times in state and federal waters within 14.6 nmi (27 km) from shore. Gear must be removed from the water and stowed on board the vessel before the vessel returns to port.</p>		

Beach Gear		
Summer Northern and Southern North Carolina; Winter Mixed	NC coast- wide	Year-round: No person fishing in a Category I or II fishery may fish with a net within 300 feet (91.4 m) of the beach/water interface unless it consists of multi-fiber nylon (no type of monofilament material) that is 4 inches (10.2 cm) or less stretched mesh.
Gear Marking Requirements for all Fisheries (except Virginia Pound Net and Atlantic Blue Crab Trap/Pot)		
All	NJ - central FL	Year-round: The BDTRT recommended several components of gear marking including a unique identifier, providing a means of being visible at night, and indicating mesh size on the gear without having to pull the gear from the water. The BDTRT provided some detailed guidance on how to accomplish these goals, and NMFS interpreted and expanded upon as detailed in Table 32.
Bycatch Certification Training for all Fisheries		
All	NJ - central FL	Year-round: Bycatch Training Certification: For category I and II Fisheries and beginning on (date to be determined) the operator of a vessel and persons in a non-vessel fishery may not fish with, set or haul back gear, or allow gear to be in areas specified within the applicable management units unless the operator/person has satisfactorily completed the bycatch certification training program and possesses on board the vessel a valid bycatch training certificate issued by NMFS. Notice would be given announcing the times and locations of bycatch certification training programs. Training is to be provided by NMFS, appropriate state agencies or other designated agents in cooperation with regional contacts for regional specific guidance.

4.6.1 Biological Effects

The biological benefits of reduced bycatch rates of the coastal bottlenose dolphin stock and the sea turtle species because of the gillnet prohibition in state waters (Alternative 5) would provide the greatest conservation benefits when compared to other alternatives. However, Alternative 6 results in the fifth lowest bycatch estimates and reduces estimated bycatch to below PBR for each

management unit (Table 39). It would also reduce the potential takes of sea turtles in the Northern North Carolina Management Unit during the winter.

Table 39: Alternative 6 in Comparison to PBR and Actual Bycatch in the Year 2000. The bycatch estimate is equal to the sum of the predicted bycatch estimate for ocean gillnet plus beach seine gillnets.

Seasonal Management Units	PBR	Actual Bycatch ¹ in the Year 2000	Alternative 6 Predicted Bycatch Estimates: BDTRT Recommendations
SUMMER			
Northern migratory	73	30	29 (or 36)
Northern North Carolina	20	29	15 (or 19) ²
Southern North Carolina	9.9	0	0
WINTER			
Mixed Stock	68	151	57 (or 61) ³
ALL YEAR			
South Carolina	20	Unknown	Unknown
Georgia	17	Unknown	Unknown
Northern Florida	3.3	0	Unknown
Central Florida	74	4	Unknown

This Table was based primarily on documents 4-1-03 g and 4-1-03 x (see Appendix 3); however, it was updated based on Palka and Rossman (2004). (Shaded cells denote bycatch at PBR, below PBR, or unknown).

¹2000 bycatch estimates are actual, whereas, the other estimates are predicted. Columns with an estimate in parentheses means a range of effort was explored, usually 50% (and 100%) of the effort (landings) as reported in 2001.

²Mortality estimate includes the average estimated mortality of 3 animals attributed to beach-based gillnets (Palka and Rossman 2004).

³Mortality estimate includes the average estimated mortality of 4 animals attributed to beach-based gillnets (Palka and Rossman 2004).

Some of the bycatch reduction potential associated with this measure is not accounted for in Table 40 because it does not lend itself to calculation. For instance, each of the nine fisheries, across all areas, would participate in mandatory bycatch certification training. The training

would instruct the fishermen on gear practice modifications and how to avoid interactions with bottlenose dolphins and sea turtles.

NMFS is not implementing Alternative 6 as its Preferred Alternative because it is at a greater burden to the fisheries and human communities, as well as NMFS. Additionally, the management measure to require hauling small mesh gillnet gear once per 24 hours is unenforceable, and the mandatory bycatch certification training would create substantial burden on NMFS to establish a program and ensure all commercial fishermen maintain appropriate level of training. Both these measures create undue burden without a demonstrable benefit to bottlenose dolphins.

4.6.2 Effects on Existing Fisheries and Communities

For a detailed discussion of the fishery and fishing community impacts, see the Regulatory Impact Review, Social Impact Assessment and Initial Regulatory Flexibility Act Analysis discussion in Sections 5.0-7.0.

The BDTRT recommendations include most of the gillnet requirements included in the Preferred Alternative, plus beach gear requirements, gear marking requirements for all fisheries, mandatory bycatch certification training, and a requirement to haul gear once every 24 hours in the small mesh gillnet fisheries in the North Carolina portion of the Winter Mixed and the Summer Northern North Carolina management units. The description of impacts of the Preferred Alternative, therefore, apply here as well, and are incorporated herein by reference. The absolute cost of a mandatory bycatch certification training requirement is not able to be quantified, as training and re-certification would need to continue indefinitely. The gear-hauling requirement is not expected to be enforceable and, hence, not expected to alter current fishing practices or harvests. Thus, the impacts of this Alternative on harvests and ex-vessel revenues are as previously noted, a reduction in harvests of approximately 885,000 pounds and a loss of ex-vessel revenues of \$1.009 million.

The primary difference between the expected impacts of the Preferred Alternative and this Alternative are the increased time and expense burden associated with the mandatory bycatch certification training program, gear marking requirements, beach gear requirements, and seasonally-adjusted closures North Carolina state waters. Alternative 6 would impose a significantly greater burden on fishermen than the Preferred Alternative because of the additional management measures described above. Burden hours increase from an estimated maximum of 240,000 hours under the Preferred Alternative to a potential of over 3 million hours, while gear marking costs under this Alternative are potentially greater than \$8 million. The increased costs associated with gear marking increase the likelihood that continued operation in the fishery may not be economically feasible. The increased time burden spent in marking gear also further increases the potential likelihood of significant social or community impacts. Impacts may include the diminished flexibility to devote this time to fishing, resulting in a loss of potential revenue, as well as time devoted to other jobs, the pursuit of other activities around the home,

with one's families or others in the community, or the pursuit of other activities that define the quality of one's life.

Other significant differences between Alternative 6 and the Preferred Alternative is the inclusion of the beach gear requirements and seasonally-adjusted closures in North Carolina state waters. As discussed in Sections 5.0-7.0, these measures would result in increased adverse impacts on fisheries and communities relative to the Preferred Alternative.

4.6.3 Cumulative Effects on Existing Fisheries and Communities

In general, fishermen continue to be faced with an increased burden of fishing restrictions and fewer opportunities to enter new fisheries. Although departure from fishing as a profession need not always lead to economic loss because the personal decision to fish is often a lifestyle decision and not an economic decision, there is, however, a cumulative burden of stress, loss of individual choice or self-direction, and social disruption at the individual and community level. While it is unknown how many entities would be forced to cease fishing as a result of this Alternative, the imposition of additional regulations on even those who manage to continue fishing contributes to an increasingly difficult work environment that would logically manifest into all facets of fishermen's lives and communities. The Reasonably, Foreseeable, Future Actions (RFFAs) for this Alternative, and all others, were identified and are detailed in the cumulative effects section for the Preferred Alternative.

4.6.4 Consistency with Other Plans and Policies for Existing Fisheries and Communities

By implementing this Alternative, NMFS would meet the requirements of the MMPA to reduce bottlenose dolphin bycatch to levels below the stock's PBR within six months of BDTRP implementation. However, it would not consider the economics of the affected fisheries as required by NEPA. This Alternative, in comparison to the Preferred Alternative, would create a greater economic impact on the human community because of the requirement for small mesh gillnets to haul gear every 24 hours, to attend mandatory training, and for all fisheries to mark their gear (i.e., the crab pot and pound net fisheries). This increased economic impact does not outweigh the bycatch potential that is gained by implementing the Preferred Alternative.

4.6.5 Mitigation Measures for Effects on Existing Fisheries and Communities

Alternative 6 would cause some economic hardship to existing fisheries and communities due to the gear restrictions, proximity requirements, time/area closures, and mandatory training; but the impacts would be less than Alternatives 3 and 5. Should NMFS implement this Alternative, the mitigation measures for the effects on existing fisheries and communities would contain, at a minimum, those detailed in the Preferred Alternative mitigation section. To further offset potential impacts, NMFS may delay the implementation of various gear restrictions and time/area closures, and gear marking requirements, stagger time/area closures to minimize loss of fishing effort, and conduct additional cooperative gear research.

4.7 ALTERNATIVE 7 (PREFERRED ALTERNATIVE) - Modified BDTRT Regulatory Recommendations (without gear marking and beach gear requirements, and seasonally-adjusted closures for Virginia and North Carolina state waters) and revise the large mesh gillnet size restriction to 7-inch (17.8 cm) or greater stretched mesh under the mid-Atlantic large mesh gillnet rule (67 FR 71895).

Under this Preferred Alternative, gear marking and beach gear requirements, as well as the seasonally-adjusted closures in North Carolina and Virginia state waters will not be implemented as outlined in the proposed rule (69 FR 65127) and detailed in Alternative 2. This Alternative will include management measures for small, medium, and large mesh gillnets in all management units (Table 40), non-regulatory conservation measures, and a revision to the large mesh gillnet size restriction to include 7-inch stretched mesh gillnets under the mid-Atlantic large mesh gillnet rule (67 FR 71895).

Under this Preferred Alternative, NMFS will implement all the BDTRT's recommendations except the following: (1) the requirement for mandatory bycatch certification training; (2) a requirement to haul gear once every 24 hours in the small mesh gillnet fisheries in the North Carolina portion of the Winter Mixed and the Summer Northern North Carolina management unit; (3) beach gear requirements; (4) gear marking requirements; and (5) extending the seasonally-adjusted closures in North Carolina state waters. Implementing this Preferred Alternative considers the issues and concerns raised during the public comment process for the proposed rule to implement the BDTRP and amend the mid-Atlantic large mesh gillnet rule (69 FR 65127).

The BDTRT recommended that Category I and II fishermen complete a mandatory bycatch certification training program. NMFS believes that a mandatory certification program is currently not necessary and is, instead, implementing non-regulatory outreach and education measures for the fishermen affected by the BDTRP by: (1) Conducting workshops and dockside visits; (2) Providing educational and compliance materials, such as placards, decals, and brochures through mailing distribution; and (3) Providing a dedicated website with pertinent compliance guidelines, gear modification techniques, etc that allow easy access to materials.

NMFS is not implementing the requirement to haul gear once every 24 hours in the small mesh gillnets for the Winter Mixed and the Summer Northern North Carolina management units. NMFS analyzed fishery data and found that 98 percent of the observed hauls soaked for less than 24 hours; therefore, this management measure is unnecessary. Additionally, this requirement is difficult to enforce because it would require a continuous monitoring of the nets for at least 24 hours. NMFS instead plans to highlight gear-tending practices during workshop training and in outreach materials.

NMFS is not implementing the proposed beach gear operating measures in this Preferred Alternative because: (1) The proposed measures for beach gear would have inadvertently impacted nearshore gillnet and other commercial fishermen that were not the intent of the BDTRT Consensus Recommendations; (2) A review of the most recent bycatch estimates provided by Palka and Rossman (2005) suggests that the proposed measures for beach gear are not currently necessary to reduce bottlenose dolphin bycatch to below PBR; and (3) NMFS believes additional information is necessary regarding the level of bycatch in both beach gear and nearshore gillnet fisheries and possible measures to reduce this bycatch. Therefore, the following activities are being pursued by NMFS before proceeding with final rulemaking on this aspect of the BDTRP: (1) Research in the stop net fishery to compare bycatch rates of fish and other marine species between current net configurations and the proposed net configuration, as well as differences in potential dolphin interaction rates between each net style; (2) Collection of additional information regarding the operation of and effort in beach-based and nearshore gillnet fisheries and how these influence bycatch estimates; and (3) Collection of demographic data for the nearshore gillnet fisheries in the mid-Atlantic to help determine if bycatch reduction measures are necessary in nearshore gillnet fisheries.

After reviewing all received public comments and recommendations regarding gear marking, NMFS evaluated current gear marking requirements in each state affected by the BDTRP and determined that they currently have adequate gear marking requirements to meet the primary purpose for proposing the gear marking requirements, which is enforcement of the take reduction measures. NMFS does not believe it is necessary to duplicate gear marking requirements at this time, as it will unnecessarily burden the commercial fishermen and create confusion between state versus federal requirements. Therefore, this Preferred Alternative does not include gear marking requirements.

As a result of additional information received regarding changes in fishery effort and state fishery management regulations, the seasonally-adjusted closures for North Carolina and Virginia state waters were no longer deemed necessary to meet PBR requirements under the MMPA (Palka and Rossman 2005). Furthermore, the states of Virginia and North Carolina provided new information on the status of their fisheries and state fishery management measures, which upon review and analysis resulted in the determination that the seasonally-adjusted closures were also not necessary for sea turtle conservation. Therefore, the seasonally-adjusted closures proposed to be extended into North Carolina and Virginia state waters are not included in this Preferred Alternative.

Table 40: Alternative 7: Modified BDTRT Regulatory Recommendations

Management Unit	Fishing Area	Gillnet Mesh Size Requirements (Stretch Mesh)		
		Small (5 in)	Medium (>5 in to <7 in)	Large (7 in)

Summer Northern Migratory	NJ - VA	None	Jun. 1-October 31: Anchored gillnets-fishermen must remain within 0.5 nmi (0.93 km) of the closest portion of each gear fished at night in state waters, and any gear fished at night must be brought back to port with vessel.	Jun. 1-October 31: Anchored gillnets - fishermen must remain within 0.5 nmi (0.93 km) of the closes portion of each gear fished at night in state waters, and any gear fished at night must be brought back to port with vessel.
Winter Mixed - Virginia	Cape Charles Light to VA/NC border			November 1-December 31: No fishing at night in state waters, and, at night, gear must be removed from the water and stowed on board the vessel before the vessel returns to port.
Summer Northern North Carolina AND Winter Mixed Northern North Carolina	VA/NC border to Cape Lookout	May 1-October 31: Net length must be less than or equal to 1,000 feet (304.8 m).	November 1-April 30: No fishing at night in state waters; sunset clause of 3 years for this restriction.	April 15-December 15: No fishing at night in state waters. December 16-April 14: no fishing at night in state waters without tie-downs.

Summer Southern North Carolina AND Winter Mixed Southern North Carolina	Cape Lookout to NC/SC border	None	November 1-April 30: No fishing at night in state waters; sunset clause of 3 years for this restriction.	April 15-December 15: No fishing at night in state waters. December 16-April 14: No fishing at night in state waters, and, at night, gear must be removed from the water and stowed on board the vessel before the vessel returns to port.
South Carolina, Georgia, Northern Florida, and Central Florida	SC, GA, and FL	Year-round for all gillnet gear: Fishermen must remain within 0.25 nmi (0.46 km) of the closest portion of their gear at all times in state and federal waters within 14.6 nmi (27 km) from shore. Gear must be removed from the water and stowed on board the vessel before the vessel returns to port.		

4.7.1 Biological Effects

This Preferred Alternative is expected to reduce bycatch of the bottlenose dolphin stock in all management units to levels below PBR (Table 41) within six months of implementation of this Preferred Alternative. NMFS believes the Preferred Alternative is the most consistent with the social, economic, and biological environments, and it provides sufficient bycatch reduction necessary per the MMPA and ESA. Alternatives 4 and 3 provide the second and third greatest bycatch reduction potential for each bottlenose dolphin management unit and sea turtles, respectively, although they have the potential for bycatch to exceed PBR in the Summer Northern North Carolina Management Unit. Alternative 5 will have the greatest reduction of marine mammal bycatch since it completely eliminates fishing in state waters. Alternative 2 and the Preferred Alternative have almost equivalent bycatch reduction potential. Compared to the Preferred Alternative and Alternative 2, Alternatives 3, 4, and 5 will likely pose less risk to fish and other marine mammal species because these alternatives are more restrictive to fishermen and will have greater benefits to other species since effort and landings will be reduced overall. The Preferred Alternative, however, accomplishes the objectives of the BDTRP to reduce estimated bycatch below PBR in six months without placing an undue burden on fishing industry and human communities.

Table 41: Alternative 7 in Comparison to PBR and Actual Bycatch in the Year 2000. The mortality estimate is equal to the sum of the predicted bycatch estimate for ocean gillnets plus beach seine gillnets.

Seasonal Management Units	PBR	Actual Bycatch¹ in the Year 2000	Alternative 7 Predicted Mortality Estimate: Preferred Alternative
SUMMER			
Northern migratory	73	30	29 (or 36)
Northern North Carolina	20	29	15 (or 19) ²
Southern North Carolina	9.9	0	0
WINTER			
Mixed Stock	68	151	56 (or 62) ³
ALL YEAR			
South Carolina	20	Unknown	Unknown
Georgia	17	Unknown	Unknown
Northern Florida	3.3	0	Unknown
Central Florida	74	4	Unknown

This Table was based primarily on documents 4-1-03 g and 4-1-03 x (see Appendix 3); however, it was updated based on Palka and Rossman (2004) and (2005). (Shaded cells denote bycatch at PBR, below PBR, or unknown).

¹2000 bycatch estimates are actual, whereas, the other estimates are predicted. Columns with an estimate in parentheses means a ranges of effort was explored, usually 50% (or 100%) of the effort (landings) as reported in 2001.

²Mortality estimates includes the average estimated mortality of 3 animals attributed to beach-based gillnets (Palka and Rossman 2004).

³Mortality estimates were updated based on Palka and Rossman 2005 and include the average estimated mortality of 4 animals attributed to beach-based gillnets.

4.7.2 Effects on Existing Fisheries and Communities

For a detailed discussion of the fishery and fishing community impacts, see the Regulatory Impact Review, Social Impact Assessment and Initial Regulatory Flexibility Act Analysis discussion in Sections 5.0-7.0.

As a result of the measures contained in this Preferred Alternative, participants in the oceanic gillnet fisheries in Delaware-Maryland-New Jersey are projected to experience reductions of up to 8 percent in total harvests and 11 percent in total ex-vessel revenues. Participants in North Carolina are projected to experience reductions in harvests and ex-vessel revenues of not more than 2 percent. Virginia participants in the winter fishery are projected to experience the greatest potential impact, a reduction in harvests of up to 6 percent and ex-vessel revenues of 14 percent. Total harvest reductions across all areas and fishery sectors are estimated at 855,000 pounds with an ex-vessel value of \$1.009 million. This represents 5.32 percent of oceanic gillnet harvests and 10.4 percent of ex-vessel revenue, and 1.78 percent of total harvests by these participants and 2.57 percent of ex-vessel value. These reductions range from no impact in some fisheries/areas, to over 10 percent in others (the Delaware-Maryland-New Jersey summer northern medium and large mesh gillnet fisheries and the Virginia Winter Mixed large mesh gillnet fishery).

Due to the limited amount of information available on fishing communities in the mid-Atlantic, it is not possible to predict with certainty what impact these recommendations will have on the fishermen, fishing dependent businesses, and the communities where these fishermen and businesses reside and conduct business. A total of 3,079 entities were identified as having recorded landings in the 2001 fishing season using gillnet gear in North Carolina through New Jersey. It is unknown, however, how many individuals, family units, other businesses, etc., are encompassed by these entities and associated businesses and communities.

The projected harvest and revenue reductions may have varying impacts on the fishermen, fishing-dependent businesses, and the fishing communities depending on the specific amount of the reduction in harvest for a respective fishery, and the relative importance of that harvest to overall harvest activity for those fishermen and respective businesses and communities.

The analysis for this EA assumes that fishermen will not shift from one fishery to another as new regulations are imposed. However, fishermen may in fact adapt to the new regulations by changing the way in which they fish, or switch to another fishery, if feasible, to continue to make the same amount of income from fishing. New restrictions on the way people fish may force some fishermen to seek other types of employment to supplement their income. Some fishermen may choose to leave the industry altogether for a new profession if it is not economically feasible to change their current fishing practices, or they cannot switch to another fishery. Obviously, changes to the amount of fish harvested, or changes in the number of fishermen involved in a particular fishery, will have impacts on the people in fishing dependent businesses and on the fishing communities. Such movements, however, cannot be predicted at this time. It should be noted that as fishermen continue to be subjected to an increasingly restrictive regulatory environment, they face an increasingly limited set of options for relocation to other fisheries or modification of their fishing behavior.

The intent of this Preferred Alternative is to reduce the mortality and serious injury of the western North Atlantic coastal bottlenose dolphin stock incidentally caught in commercial fisheries, from New Jersey to Florida, to below PBR and to revise the large mesh size restriction

in the mid-Atlantic large mesh gillnet rule. The revision will provide more consistency in federal and state regulations for large mesh gillnets along the mid-Atlantic and provide ease for commercial fishermen complying with various large mesh regulations in the mid-Atlantic. Any reduction of harm to dolphins will be a positive step towards preservation of these species and of marine biodiversity. Based upon review of all the public comments and the summary notes of the last BDTRT meeting held during the public comment period of the proposed rule, this Alternative will incorporate the most current analysis of bottlenose dolphin and sea turtle interaction rates in North Carolina and Virginia state waters. Also based on the public comments received, this Preferred Alternative will allow for the consideration of the current gear marking requirements of the individual states affected by the BDTRP.

4.7.3 Cumulative Effects on Existing Fisheries and Communities

The purpose of this section is to summarize the incremental impacts of this Preferred Alternative on the environment when added to other past, present, and reasonably foreseeable future actions (RFFA), regardless of what agency or person undertakes them. The Council on Environmental Quality (CEQ) states that the range of alternatives considered must include the “no action alternative as a baseline against which to evaluate cumulative effects.” Hence, the analysis referenced in the following cumulative impacts discussion, equates the given effects of the Preferred Alternative to the effects of the no-action alternative.

Cumulative effects analyses are usually considered according to the action area. The action area of this Preferred Alternative, from New Jersey through Florida, encompasses the range of the coastal bottlenose dolphins and sea turtles; therefore, the cumulative effects analyses is based on both the action area and the range of the species. The specific range of the coastal bottlenose dolphin is within 6.5 nmi (12 km) of shore from the New York/New Jersey border south to Cape Hatteras, North Carolina, and within 14.6 nmi (27 km) of shore from Cape Hatteras southward to, and including the east coast of Florida down to the demarcation line between the Atlantic Ocean and the Gulf of Mexico. Sea turtles are found both inshore and offshore (including the EEZ). Based on this action area, all commercial fishing activity impacts occurring in this area must be considered under this cumulative effects analysis.

Principles of Cumulative Effects Analysis

There are eleven principles in cumulative effects assessment (CEA), based on the Council on Environmental Quality’s (CEQ) handbook titled, “Considering Cumulative Effects Under the National Environmental Policy Act”(1997). These include the following principles to: (1) Identify the significant cumulative effects issues associated with the Preferred Alternative and define the assessment goals; (2) Establish the geographic scope for the analysis; (3) Establish the time frame for the analysis; (4) Identify the other actions affecting the resources, ecosystems, and human communities of concern; (5) Characterize the resources, ecosystems, and human communities identified in scoping in terms of their response to changes and capacity to withstand stresses; (6) Characterize the stresses affecting these resources, ecosystems, and human communities and their relation to regulatory thresholds; (7) Develop a baseline condition for the

resources, ecosystems, and human communities; (8) Identify the important cause-and-effect relationships between human activities and resources, ecosystems, and human communities; (9) Determine the magnitude and significance of cumulative effects; (10) Modify or add alternatives to avoid, minimize, or mitigate significant cumulative effects; and (11) Monitor the cumulative effects of the selected alternative and to adapt management accordingly.

The first principle of CEA is to identify the significant cumulative effects issues associated with the Preferred Alternative and define the assessment goals. The effects and the goals of the Preferred Alternative are identified and discussed in Sections 1.0 and 2.0 of this document. The pathways and connections are recognized and discussed in these sections of the document. In summary, the Preferred Alternative is expected to impact nine commercial fisheries along the east coast of the United States from New Jersey through Florida in order to reduce dolphin/fishery interactions by implementing the following requirements: gear proximity, regulation of allowable fishing times, including seasonal closures and prohibitions on night time fishing and gear length and mesh size requirements.

Principle two and three of CEA establish the geographic scope and time frame for the analysis. The geographic scope and time frame is discussed in Sections 2.0 and 3.0 of this document. In summary, the Preferred Alternative was developed and based on the extended range of the coastal bottlenose dolphin, as well as the short and long term goals mandated by the MMPA. The Preferred Alternative was developed to reduce the bycatch of the coastal bottlenose dolphin stock in nine unique fisheries along the United States as mandated by section 118 of the MMPA.

The fourth principle of CEA is to identify the other actions affecting the resources, ecosystems, and human communities of concern. The purpose of this CEQ principle is to summarize the incremental impact of the Preferred Alternative on the environment when added to past, present and RFFAs regardless of federal, non-federal, or private groups who undertake them (40 CFR 1508.7). Cumulative effects must be considered in relation to previous measures and impacts as well as to consider the direct and indirect effects of the management measures on the resource, ecosystem, and human environment. Cumulative effects must also consider the short and long term effects of the management measures under consideration. It is not practical to analyze the cumulative effects of an action on the universe, but the list of environmental effects must focus on those that are truly meaningful.

Past Actions

Pursuant to the MMPA, one of the earliest rules for reducing the bycatch of marine mammals occurred as a result of the Mid-Atlantic Take Reduction Team's (MATRT) recommendations (63 FR 66464). The rule implemented the take reduction plan and put in place a series of time and area closures along with gear requirements. The recommended management measures were specific to two coastal gillnet fisheries, the monkfish and dogfish fisheries. The measures included reduced floatline length, larger twine size, tie downs, and a limit of 80 nets for the monkfish fishery and a reduction of floatline length, larger twine size, and a 45-net limit for the dogfish fishery. Additionally, the measures included time and area closures. At the time, it was

estimated that under the Preferred Alternative, 95 vessels (35 percent of total, 54 percent of impacted) will experience a 5 percent increase due to the gear requirement of pingers. It was also estimated that the total economic loss for the Preferred Alternative to the Gulf of Maine and the mid-Atlantic regions to be between \$609 thousand dollars and \$4.5 million dollars, depending on the number of vessels that could shift their effort to the non-closed areas and the number of pingers needed, which would have to be purchased.

Present and Future Actions

Based on the nine fisheries that were identified to frequently or occasionally interact with coastal bottlenose dolphins, and for which regulatory measures will be implemented under the Preferred Alternative, NMFS anticipates several fisheries have and will be impacted by RFFAs. Among these are the mid-Atlantic coastal gillnet fishery, the southeast Atlantic gillnet fishery and the southeastern U.S. Atlantic shark gillnet fishery. Gear modifications in all three of these fisheries are currently being analyzed by NMFS with the assistance of the ALWTRT (Atlantic Large Whale Take Reduction Team). Management measures are needed in order to reduce the incidental mortality and serious injury of right, humpback and finback whales incidentally taken in commercial fisheries. In the Notice of Intent (NOI) (68 FR 38676) to prepare an environmental impact statement (EIS) for the ALWTRP and the associated scoping document, NMFS stated it has identified and is currently analyzing potential gear modifications consisting of weak links on all flotation devices, weighted toggles, or lead lines for the mid-Atlantic gillnet fishery and southeast Atlantic gillnet fishery, as well as the requirement to use sinking or neutrally buoyant line. Currently, it is difficult to assess what impact(s) these management measures will have on these fisheries and the effects of these potential gear modifications as well as cumulative effects currently being analyzed in preparation of the EIS for that proposed action.

The southeastern U.S. Atlantic shark gillnet fishery will also be impacted by a NMFS rule to implement the final Amendment 1 to the fishery management plan for Atlantic tunas, swordfish, and sharks. Under this rule, the Preferred Alternative chosen, which will impact this fishery, was to require a Vessel Monitoring System (VMS) on shark drift gillnet vessels during the right whale calving season. The intent of this was to allow the commercial shark gillnet fishery to continue while minimizing interactions with protected species. The VMS will give NMFS Enforcement the ability to monitor and track vessels fishing in the vicinity of right whale protected areas during right whale calving season. NMFS concluded that this may result in significant negative economic impact on the small entities who participate in this fishery, but it will only have minor economic impact on the industry as a whole because the shark drift gillnet vessels comprise only a small percentage of the entire commercial shark fishing industry.

Another RFFA is a sea turtle conservation rule that impacts the Virginia pound net fishery. On June 22, 2001, NMFS published a temporary rule (66 FR 33489) requiring all Virginia permitted fishermen deploying pound nets with leaders measuring 8-inches (20.3 cm) or greater stretched mesh and leaders with stringers to tie-up such leaders in Virginia waters of Chesapeake Bay and tributaries for a period of 30 days. NMFS promulgated this action to protect threatened and endangered sea turtles. Because of the continued threat to sea turtles with this fishery, NMFS

recently published a final rule (69 FR 24997, May 5, 2004) to prohibit the use of all pound net leaders from May 6 to July 15 each year in the Virginia waters of the mainstem Chesapeake Bay, south of 37° 19.0' N. lat. and west of 76° 13.0' W. long., and all waters south of 37° 13.0' N. lat. to the Chesapeake Bay Bridge Tunnel at the mouth of the Chesapeake Bay, and the James and York Rivers downstream of the first bridge in each tributary. Furthermore, NMFS prohibits the use of all leaders with stretched mesh greater than or equal to 8-inches (20.3 cm) and leaders with stringers from May 6 to July 15 each year in the Virginia waters of the Chesapeake Bay outside of the aforementioned area, extending to the Maryland-Virginia State line and the Rappahannock River downstream of the first bridge, and from the Chesapeake Bay Bridge Tunnel to the COLREGS line at the mouth of the Chesapeake Bay. NMFS analyzed the effects of this action on the small entities that participate in the upper portion of the Virginia Chesapeake Bay pound net fishery. Data suggest that 45 percent of the fishermen (n=31) will be impacted. It is estimated that under the Preferred Alternative, annual revenue per harvester will be reduced by a high of 8.4 percent. NMFS analyzed the effects of this action on the small entities who participate in the lower portion of the Virginia Chesapeake Bay pound net fishery. Data suggest that 100 percent of the fishermen (n=10) will be impacted. It is estimated that under the Preferred Alternative, annual revenue per harvester will be reduced by a high of 43.2 percent. Overall, it is estimated that industry revenues may be reduced by 18.3 percent or 0.476 million. These numbers assume fishermen will switch to a smaller mesh leader and continue to fish in those areas with leader mesh restrictions, instead of removing their leaders entirely.

One RFFA that must be considered is the revision to the striped bass fishery. NMFS recently conducted a series of public meetings in the Atlantic coastal states to discuss its intent to prepare an environmental impact statement (EIS). This EIS, in draft process, will analyze the impacts of potential revisions to federal Atlantic striped bass regulations for the U.S. Exclusive Economic Zone (EEZ). NMFS is considering a recommendation from the Atlantic States Marine Fisheries Commission to implement regulations in the EEZ that: (1) Remove the moratorium on the harvest of Atlantic striped bass in the EEZ; (2) Implement a 28-inch minimum size limit for recreational and commercial Atlantic striped bass fisheries in the EEZ; and (3) Allow states the ability to adopt more restrictive rules for fishermen and vessels licensed in their jurisdictions. It is expected, if adopted, that these management measures will impose further restrictions on the fishing community. At this time, it is difficult to determine or estimate how, if at all, these proposed restrictions will impact the fishing community and the effects of these potential additional management measures as well as cumulative effects that are being analyzed in preparation of the EIS for that proposed action.

Revisions to the spiny dogfish fishery is another RFFA considered. The Mid-Atlantic Council recently conducted a scoping meeting to initiate the development of Amendment 1 to the Spiny Dogfish FMP. This amendment will identify a biomass rebuilding target and amend the stock-rebuilding schedule to be consistent with NMFS' National Standard 1 guidelines. In addition, the Amendment will address the allocation of the quota, discard monitoring and reduction, limit access to the fishery, pose size limits, research set-asides, the specification schedule, and interactions between U.S. and Canadian fisheries. It is expected, if adopted, that these

management measures will impose further restrictions on the fishing community. On March 18, 2004, NMFS published a proposed rule (69 FR 12826) to implement regulations for the spiny dogfish fishery management plan with specific revisions for the upcoming fishing year and to provide for public comment. Following the recommendations by the Mid-Atlantic and New England fishery management councils, NMFS is proposing to maintain the historical harvest limit of 4 million pounds, a possession limit of 600 pounds in quota period one, and 300 pounds in quota period two to discourage a directed fishery. NMFS believes these measures will prevent overfishing and promote rebuilding of this fishery. It was estimated that these measures will impact each vessel by \$609 dollars or a total overall of \$155,200.

Additional actions are identified in Table 42 along with a summary of the final measures for the Preferred Alternative analyzed herein. To fully consider RFFAs' cumulative impacts, the following table was developed as a combination of the checklist and matrix method. In this method, all past, present and future actions were initially identified and listed in chronological order. Second, each action was evaluated to determine its impact on the human community by using the available EAs and EISs that were developed for each of the actions. Based on the analysis from each of the documents associated with each rule, a point scale system of one to three was applied. A point of one was used for a low impact, two points for a moderate impact, and three points when a document stated or identified the action had or was expected to have a high impact on the human community. After each action received a point scale, all actions were added and the overall cumulative impact was estimated. For these analyses the following point scale was used: **Low Significance** = (12-23 points), **Medium Significance** = (24-35 points), **High Significance** (36 points). This scale was based on only 12 actions including the Preferred Alternative because it is not possible to speculate at this time how significant the other actions may be; therefore, no points were assigned. The scoring method was based on the idea that the overall impact may be significant if each action was given three points for a total of 36 points.

Table 42: Cumulative Effects Assessment for the Fisheries Affected by the Preferred Alternative.

RFFA's		SOURCE	MEASURES	CUMULATIVE IMPACT		
				Low	Medium	High
1	NEFMC/MAFM C - Spiny Dogfish FMP	65 FR 1557; 69 FR 12826	FMP implementation- Effort Reduction for Spiny Dogfish Fishery			X

2	ASMFC-Spiny Dogfish FMP	Emergency Rule: 8/21/2000	Closed State waters for Spiny Dogfish Fishery when federal quota met	X		
3	NEFMC/SAFMC	67 FR 13098	Effort Reduction for the Monkfish Fishery	X		
4	ASMFC- Am. Shad, Hickory Shad, River Herring Fishery FMP		Closes the Am. Shad, Hickory Shad, River Herring Fishery			X
5	HPTRP	63 FR 66464	Time/Area closures, gear requirements, gear marking			X
6	Coastal Migratory Pelagics FMP	62 FR 66304	Trip limit reduction for Spanish mackerel	X		
7	ALWTRP- Implementation	62 FR 39188; 64 FR 7556	Fishing provisions for closed areas in the shark drift gillnet fishery and gear deployment restrictions for SE Atlantic gillnet fishery, and mid-Atlantic coastal gillnet fisheries			X
RFFA's		SOURCE	MEASURES	CUMULATIVE IMPACT		
				Low	Medium	
				High		
8	Coastal Migratory Pelagics FMP	65 FR 41015	Increase limits for Spanish Mackerel	Positive X		

9	Virginia Pound Net Fishery	69 FR 24997	Prohibit leaders with stringers and restrict >8 inch stretch mesh to protect sea turtles		X	
10	HMS-Tuna/Swordfish/Shark Amendment 1	67 FR 78990	Quota limits and seasons for shark drift gillnet fishery			X
11	ALWTRP-Modifications	68 FR 38676	Gear requirements, time/area closures?			?
12	ASMFC-Striped Bass	Amendment 6 to the Striped Bass FMP: 2/2003	(1) Remove the moratorium on the harvest of Atlantic striped bass in the EEZ; (2) implement size limit for recreational and commercial (3) allow states the ability to adopt more restrictive rules for fishermen			?
13	NEFMC/SAFMC	Framework 2 to the Monkfish FMP: Amendment 2: 1/7/2003	Establish TAC, trip limits or Days-at-Sea (DAS)		?	

14	MAFMC-Spiny Dogfish	Amendment 1 to the Spiny Dogfish FMP 2003	Rebuilding Program: quota allocation, discard monitoring, reduction, limited access, size limits, research			?
RFFA's		SOURCE	MEASURES	CUMULATIVE IMPACT		
				Low	Medium	High
15	Coastal Migratory Pelagics FMP	68 FR 59151	Biomass stock status determination criteria	?		
16	HMS-Tuna/Swordfish/Shark Amendment 1	Final Amendment 1: 11/2003, 68 FR 63738	VMS requirement		X	
17	BDTRP	Preferred Alternative : BDTRP and Large Mesh Size Restriction Amendment	Gillnet gear time/area restrictions and size requirements, gear practice, and large mesh gillnet size restriction amendment.	X		

OVERALL: A total of 24 points were derived by a factor weighting scale from eleven actions, including the Preferred Alternative. One point was given to Action seven: Coastal Migratory Pelagics FMP-Increase in Spanish Mackerel limits. However, five actions were not weighted since it is impossible to develop any definitive effect at this time. Therefore, based on these results, it is determined that there are no significant cumulative effects as a result of the Preferred Alternative to the human and biological environment. This determination was based on the following criteria:

Low Significance = (12-23 points), **Medium Significance** = (24-35 points), **High Significance** ≥ (36 points).

***Scoring system - (Cumulative Effect Intensity): Low Significance = 1, Medium Significance = 2, High Significance = 3**

The fifth CEA principle is to characterize the resources, ecosystems, and human communities of concern. The characterization of the ecosystem and human community is discussed in Section 3.0 of this document. In summary, this section discusses using the most current and best available information for the biological, social, and economic aspects of the human communities of concern. This section is important in establishing the background and foundation of important elements that need to be evaluated or considered. For this analysis, data was mostly compiled from various state agencies.

The sixth CEA principle is to characterize the stresses affecting these resources, ecosystems, and human communities and their relation to regulatory thresholds. These stresses are discussed in Section 4.0 under each Alternative description. In Section 4.0 each of the seven Alternatives and the possible consequences to the human or biological environment were evaluated and compared. All the Alternatives were measured against the mandates set forth by the MMPA, ESA, and NEPA. This principle is one of the most important aspects of a NEPA document because it establishes the basis for the decision maker to choose the most appropriate Preferred Alternative. In summary, the goal of this principle is to choose the Preferred Alternative based on the analysis derived from the NEPA document.

The seventh CEA principle is to develop a baseline condition for the resources, ecosystems, and human communities. The baseline conditions are evaluated in detail in Section 3.0 of this document. In summary, the baseline condition is based on both the best available scientific information and the stresses affecting the resources. For this document, the baseline conditions were measured and defined against the mandates of the MMPA and ESA.

The eighth CEA principle is to identify the important cause-and-effect relationships between human activities and resources, ecosystems, and human communities. These important cause-and-effect relationships are identified, evaluated and analyzed in Section 4.0 under each Alternative discussed. In summary, each Alternative was analyzed, and the Preferred Alternative was chosen based on the balance between the anticipated effects to both the biological and human communities.

The ninth CEA principle is to determine the magnitude and significance of cumulative effects. These effects are analyzed in this section. An overall finding and determination of no significant environmental impact is found in Section 9.0. In summary, the matrix above indicates that the overall cumulative effects and the effects of the Preferred Alternative will not have a significant effect on the biological and human communities. In general, the majority of the fisheries affected by various management measures were able to adapt. Historically, as stocks declined, management measures were implemented so that the fishery could continue to exist without additional negative effects imposed on target or non-target species. Fishermen continue to be faced with an increasing burden of fishing restrictions and fewer opportunities to enter new fisheries. Although departure from fishing as a profession need not always lead to economic

loss, there is a cumulative burden of stress, loss of individual choice or self-direction, and social disruption at the individual and community level. It is unknown if or how many entities would be forced to cease fishing as a result of the Preferred Alternative, but it is believed that the imposition of additional regulations on those who continue fishing will contribute to an increasingly difficult work environment, which will impact facets of the fishermen's lives and communities.

The tenth CEA principle is to modify or add alternatives to avoid, minimize, or mitigate significant cumulative effects. In summary, NMFS developed these alternatives based on the recommendations and guidance by the BDTRT, the scientific information available in the final stock assessment report, and new information. The Preferred Alternative was preferred because it balanced the biological and human community affects. The Preferred Alternative was also chosen because it was modified in order to adapt to most of the public comments received during the public comment period of the proposed rule, while not comprising either dolphin or sea turtle conservation. Each Alternative in Section 4.0 is evaluated on the basis of mitigation. In conclusion, the Preferred Alternative was also chosen due to the information provided during the public comment period of the proposed rule by the states of North Carolina and Virginia regarding the status of their fisheries.

The eleventh CEA principal is to monitor the cumulative effects of the selected alternative and adapt management. NMFS will accomplish this through some of the non-regulatory measures highlighted in Section 2.0. In summary, NMFS plans to evaluate the effectiveness of the Preferred Alternative by monitoring fishery interaction data and presenting this information at future BDTRT meetings. By evaluating the best and most current scientific information, NMFS seeks to implement any new technology that may reduce dolphin and sea turtle bycatch and maintain U.S. commercial fisheries with the least amount of economic impact. To assist the Agency with monitoring and adaptive management, NMFS will continue to contract a fishery liaison to serve as a contact point between the Agency and commercial fishermen. With the help of a fishery liaison, NMS should be able to evaluate the effectiveness of the selected alternative.

4.7.4 Consistency with Other Plans and Policies for Existing Fisheries and Communities

By approving the Preferred Alternative, NMFS will meet the requirements of the MMPA, and therefore, the objectives of the BDTRP by reducing coastal bottlenose dolphin bycatch below PBR in all 7 management units after six months of the plan's implementation. It will also codify the BDTRT's regulatory recommendations for gillnets and non-regulatory recommendations. NMFS will also meet NEPA requirements by finalizing the Preferred Alternative because it is estimated, based on the analyses and considerations in this EA, to have a smaller impact on fisheries and their associated fishing communities compared to the other Alternatives, except the No-Action Alternative. Additionally, NMFS will provide consistency in large mesh gillnet regulations by amending the large mesh gillnet size restriction in the mid-Atlantic large mesh gillnet rule. This will also provide ease for commercial fishermen in complying with various state and federal regulations, such as the Harbor Porpoise Take Reduction Plan, North Carolina

state regulations, and the BDTRP. Finally, the Preferred Alternative is the most equitable approach because it accounts for the public comments received during the public comment period of the proposed rule.

4.7.5 Mitigation Measures for Effects on Existing Fisheries and Communities

NMFS will continue funding cooperative gear research projects to test innovative gear modification ideas that may reduce bycatch of dolphins and sea turtles, while allowing fishermen to maintain catch effort. As with the other Alternatives, except the No-Action Alternative, NMFS will continue to consult with the BDTRT to ensure the plan is effective. The BDTRT will meet regularly after the BDTRP has been implemented to ensure it is still meeting its objectives without causing undue harm to commercial fisheries, as well as to review any new data. NMFS will also continue to monitor the coastal bottlenose dolphin stock and sea turtle populations to detect any increases or decreases. Additionally, regular meetings with the BDTRT will ensure continued commercial fishermen involvement in all aspects of the plan's continued development to meet its objectives and its implementation.

4.7.6 Non-Regulatory Measures

The BDTRT noted that effective implementation of the BDTRP requires continued research and monitoring, enforcement of regulations, outreach to fishermen, and a collaborative effort with states to remove derelict crab trap/pot gear. Therefore, the BDTRT referred to these as the non-regulatory elements of the BDTRP and included them in their Consensus Recommendations to NMFS. NMFS agrees that these are important in achieving both the short- and long-term goals of the BDTRP and includes them as part of the Preferred Alternative. Refer to section 2.1 for more detailed discussions on these non-regulatory components and their approximate cost of implementation.

Continued research and monitoring are necessary components of a TRP to ensure that the best available information continues to drive management decisions and to evaluate the effectiveness of the TRP. The following are general research and monitoring efforts that will be integral components of the BDTRP: (1) Continued research on bottlenose dolphin stock structure; (2) Design and execution of scientific surveys to provide reliable abundance estimates of the bottlenose dolphin stock; (3) Review of available information on bottlenose dolphin stock size and structure to determine whether its depleted status under the MMPA has changed; (4) Improved assessment of bottlenose dolphin bycatch by: expanding observer coverage and improving the precision of bycatch estimates; expanding stranding networks to enhance data collection efforts; assessing the factors contributing to bottlenose dolphin bycatch; providing better assessment of fishery effort; and exploring alternative bycatch monitoring methods; and (5) Completion of various ongoing gear-modification-related research projects.

NMFS will continue to conduct annual mortality and abundance estimates for the coastal bottlenose dolphin stock, as well as update the distribution of the stock. These estimates are

crucial to monitoring the effectiveness of the BDTRP at meetings its objectives. NMFS will update these estimates in the annual Stock Assessment Report, available online at www.nmfs.noaa.gov/pr/PR2/Stock_Assessment_Program/individual_sars.html, and provide updates to the BDTRT at team meetings.

NMFS agrees that additional research is needed to better understand the nature of dolphin bycatch and the efficacy of potential modifications to fishing methods or gear. NMFS recognizes the importance of cooperative partnerships in this endeavor and is partnering with state agencies, Sea Grant, academia, and commercial fishermen in conducting gear modification research and identifying bottlenose dolphin behavior around deployed gear. NMFS will continue to seek options available to work cooperatively with these entities to test gear modifications recommended by the BDTRT and described in section 2.0, as well as innovative gear modification ideas to reduce bycatch of bottlenose dolphins. NMFS intends to obtain more useful information through these research projects to better understand dolphin/fishery interactions. Through gear research analysis, NMFS may develop additional alternatives to regulations in future amendments to the BDTRP that will assist in meeting the mandates of the MMPA. NMFS also contracted a fishery liaison to facilitate research on these and other promising ideas which, when implemented, may help to bring about further reductions in bycatch. Results from gear research projects will be presented to the BDTRT at future meetings as well as to the fishing community through the outreach efforts of NMFS and fishery liaison personnel.

The observer program and the Marine Mammal Stranding Network are vital programs for monitoring the effectiveness of the BDTRP and evaluating the plan's success at meeting the short- and long-term goals of the MMPA. NMFS intends to enhance both these programs by: (1) Enhancing current observer programs and coordinating with other states and researchers to provide statistically viable sample sizes for all fisheries interacting with dolphins; (2) Implementing alternative monitoring programs (i.e., non-fishing vessel based observation platforms); (3) Establishing dedicated beach surveys and employing observer effort in geographic areas and time frames during which observer coverage is lacking; (4) Increasing stranding coverage and improving training for network participants; (5) Improving post-mortem assessments to better determine sources of mortality; and (6) Providing funding to organize and conduct workshops and training sessions to help foster communication between the observer program and stranding network, and assembling the information and staff necessary to accomplish these objectives.

Consistent enforcement is a critical component necessary to ensure the success of the BDTRP. NMFS will strategize with enforcement agents on ways to commit additional time to at-sea inspections to establish appropriate levels of enforcement of the BDTRP. To ensure implementation needs continued to be met, NMFS agents will attend all future BDTRT meetings.

NMFS will also formally request federal, state, and local fishery enforcement agents monitor inside waterways for dolphin bycatch and fishery/human interactions to help enhance the stranding network and monitor for compliance of the BDTRP. Additionally, training will be

provided to agents on all aspects of the BDTRP, including on how to respond to and assist with marine mammal strandings.

Therefore, this training will: (1) Review all regulatory components of the BDTRP; (2) Discuss the agent's role in stranding response and in educating fishermen and the public; (3) Include similar training materials as provided to the fishermen; (4) Be conducted at regional law enforcement meetings; and (5) Be incorporated into state/NMFS Joint Enforcement Agreements.

Another necessary component of the BDTRP is to ensure that affected commercial fishermen understand the regulatory and non-regulatory elements of the plan and how they apply to each fishery and fishing area. Therefore, the BDTRT recommended that outreach and education workshops be conducted to: (1) Inform fishermen of new and existing regulations to reduce bycatch in their fisheries, as well as potential gear modifications developed via gear research; (2) Supply contact information and protocols for responding to dolphin/fishery interactions or strandings; and (3) Encourage best fishing practices to reduce bycatch. NMFS intends to conduct these workshops in major ports along the east coast to inform the commercial fishermen on these aspects of the BDTRP, as well as more local dockside visits. Both workshops and dockside visits will take place in various locations from New Jersey through Florida. NMFS will provide compliance guides, placards, and decals through a mailing to all affected Category I and II fishermen. Pertinent information for commercial fishermen will also be available on NMFS' website.

The final non-regulatory element included in the BDTRP is for NMFS to encourage states to develop and implement a program for the removal of derelict blue crab traps/pots and associated lines. This program will help reduce impacts of the large blue crab fishery that exists along the coastal bottlenose dolphin's range. NMFS will continue to support state efforts in the removal of derelict crab traps/pots and work with state partners and other stakeholders to develop such programs in states that currently do not actively remove derelict crab traps/pots.

NMFS will also conduct an outreach program to encourage voluntary gear modifications to the crab trap/pot fishery, which include: (1) Using sinking or negatively buoyant line; (2) Limiting the line to the minimum length necessary; and (3) Using inverted or modified bait wells for those areas where dolphins are tipping traps and stealing bait. NMFS recently funded a pilot project to examine the use of inverted or modified bait wells, and the results will determine if these modified bait wells are feasible for experimentation by the fishery. Another study was also recently funded to examine the characteristics of the buoy line in the water with respect to various factors, and their role in dolphin entanglements in the crab trap/pot fishery.

5.0 REGULATORY IMPACT REVIEW

5.1 INTRODUCTION

A Regulatory Impact Review (RIR) for all regulatory actions that are of public interest is required by NMFS. The RIR does three things: 1) it provides a review of the problems and policy objectives prompting the regulatory proposals and an evaluation of the major alternatives that could be used to solve the problem, 2) it provides a comprehensive review of the level and

incidence of impacts associated with a proposed or final regulatory action, and 3) it ensures that the regulatory agency systematically and comprehensively considers all available alternatives so that the public welfare can be enhanced in the most efficient and cost effective way.

The RIR also serves as the basis for determining whether a proposed regulation is a "significant regulatory action" under criteria provided in Executive Order 12866 and whether the proposed regulations will have a "significant economic impact on a substantial number of small entities" in compliance with the Regulatory Flexibility Act of 1980 (RFA), as amended. The primary purpose of the RFA is to relieve small businesses, small organizations, and small governmental jurisdictions (collectively: "small entities") of burdensome regulatory and record keeping requirements. The RFA generally requires agencies to conduct an Initial Regulatory Flexibility Analysis (IRFA) and Final Regulatory Flexibility Analysis (FRFA) when promulgating rules using notice and comment rulemaking (issuing a proposed and final rule). The IRFA and FRFA are designed to assess the economic impact that various regulatory alternatives would have on small entities, including small businesses, and to find ways to minimize that impact. An agency is not required to prepare and IRFA or FRFA if it can certify that the rule, if adopted, will not have a significant economic impact on a substantial number of small entities.

5.2 PROBLEMS AND OBJECTIVES

The description of the problem and objectives of the Action are presented in Section 1.1 and are incorporated herein by reference. The overall objective of the Action is to reduce the incidental serious injuries and mortalities of the western North Atlantic coastal stock of bottlenose dolphins attributed to the nine commercial fisheries from New Jersey to Florida to below PBR for each management unit, and protect sea turtles.

5.3 IMPACTS AND MANAGEMENT MEASURES

The alternatives for reducing the number of incidental injuries and mortalities of bottlenose dolphin and potential take of sea turtles are presented in Sections 2.0 and 4.0 and are incorporated herein by reference. A description of the fisheries and data are presented in Section 3.3 and are included herein by reference. As discussed in Section 3.3.2, the fishery description does not track vessel operation across multiple states. The following analysis, therefore, does not incorporate consideration of migratory behavior, i.e., the operation of a vessel in the state or federal waters of multiple states. Thus, the following assessment may not provide a complete picture of the annual fishing behavior of each individual fishing operation. It cannot be determined, however, whether this limitation over or under estimates dependence upon specific gears or seasonal fisheries.

Further, due to the complexities of the measures and the limitations of available data, as previously described with regard to the generation of projected incidental serious injury and mortality (bycatch) for bottlenose dolphins under the various Alternatives, the analytical approach taken in the estimation of expected impacts adopts the harvest assumptions utilized in generating the bycatch estimates. For example, the bycatch assessment of the management alternatives assumed that the resultant harvest effort for the respective gillnet sectors will be

either 100 percent (no change) or 50 percent (a 50 percent reduction) of the 2001 fishing season level. These assumptions are maintained in the estimation of economic impacts. It should be clearly understood that these were necessary assumptions to allow analytical assessment of the Alternatives due to the limitations of available data. Actual harvest reductions may be considerably less which, it should also be noted, may have adverse implications for bycatch reduction. Further comment on this is provided below. The analysis additionally assumes, consistent with the estimation of bycatch, that effort does not shift from one management unit to another, or from one fishery to another. In reality, adaptive response can be expected, which would reduce the projected short-term impacts but also potentially worsen conditions in other areas or fisheries. The impact of this adaptive response cannot be forecast since neither the direction nor the magnitude of shift can be predicted. From the perspective of the gillnet fisheries in the regulated areas, since the resultant effort assumption is fairly severe (a 50 percent reduction in some instances) and adaptive behavior within the same fishery is not incorporated, the impacts described below should be considered upper bounds. However, since movement into other fisheries and additional resultant pressure cannot be forecast, it cannot be determined whether the estimates represent an upper bound across all fisheries.

The assessment of impacts on the Virginia fishery assumes that ocean water fishery is captured in the data by the water body codes 625 and 631. It cannot be determined if this assumption over estimates or underestimates the impacts on the Virginia fishery.

As previously stated, adaptive fishing behavior may occur and/or fishing effort/harvest reduction may not meet expectations, with subsequent potentially adverse impacts on bottlenose dolphin and sea turtle bycatch reduction. Should such occur, additional more restrictive action would likely be required, similar to that discussed under Section 5.3.2 below, resulting in greater adverse economic impacts than those imposed by the Preferred Alternative. Absent specification of these actions at this time, it is not possible to quantitatively assess these impacts.

The following sections will provide description and discussion of the adverse economic impacts of the Alternatives. Associated with any action, however, are the expected benefits. It should be clear that the Preferred Alternative is developed with the intent of achieving the benefits, monetary and otherwise, of reduction in the bycatch of bottlenose dolphins and sea turtles. Although these benefits cannot be quantified (see below), their existence is inarguable.

5.3.1 Non-Regulatory Recommendations

Several non-regulatory requirements, as detailed in Section 2.0, will accompany each of the regulatory Alternatives examined below. The following discussion focuses on actions and costs that will occur post-development of the BDTRP itself and are considered necessary for implementation and monitoring of the Plan. Implementation includes outreach/education, gear research, and the National Stranding Program. Monitoring includes observer coverage to determine bycatch estimates and post-Plan meetings, should bycatch conditions necessitate additional BDTRT meetings.

The costs associated with implementation of the National Stranding Network, Observer Program, and BDTRT follow-up actions can be estimated on an annual basis. The annual estimate for implementing the National Stranding Program will be \$198,800 and for monitoring via the Observer Program will be \$1,919,700. BDTRT follow-up actions will occur as necessary at \$52,500 for a meeting room, facilitators, and cost of NMFS participants, as well as \$218,920 for staff and overhead costs. It is assumed the BDTRT will meet twice during the first year of implementation for a total cost of \$437,840. Please see Section 2.0 and Appendix 5 for further details.

The estimated cost of executing the 13 gear research projects described in Section 2.0 is \$235,000. Six of these projects have known cost estimates, four are at no cost to the government, and three have costs yet to be determined. Forty percent was added to the known estimate to account for those projects that do not have costs yet determined and to allow for continuing development of future ideas. This totals \$329,000 for implementation of gear research projects (see Section 2.0 and Appendix 5). Although the gear research projects are different in terms of cost, it is not known which projects will be undertaken first or in any given year. It is assumed, however, that all projects will be completed within three years of implementation of the BDTRP. Therefore, the costs of the gear research are assumed to be equally divided over each of the three years, at an annual implementation cost of \$110,000 per year.

Implementing outreach/education for the BDTRP for the first year is estimated to cost about \$232,050. Mail-outs will occur after initial implementation of the BDTRP at \$192,300 for development, graphic design, and printing. The website development will be a one-time monetary commitment of \$2,000. The voluntary workshops (\$16,750) and dockside visit/fisherman fora (\$21,000) components of the outreach/education will most likely occur again at year three of implementing the BDTRP. Please see Section 2.0 and Appendix 5 for further details.

The first year of implementing and monitoring the BDTRP, will be assumed to include each non-regulatory requirement listed above and detailed in Section 2.0. The cost for gear research will include the per year cost (\$110,000) rather than the total \$329,000 if all research is completed in three years. Therefore, the approximate first year cost of non-regulatory requirements for the BDTRP is \$3,003,390. In subsequent years, costs will presumably decrease because the BDTRT follow-up actions may not be necessary; there will be no cost for the website development; voluntary workshops and dockside visits/fishermen fora will only take place again at year three; and gear research will be completed after year three.

5.3.2 Alternative 1 - No-Action Alternative

This Alternative would allow status quo operation of fishing activities and would, therefore, have no short-term effect on the oceanic gillnet fisheries of the mid-Atlantic. However, failure to act in a timely manner would not meet the objectives and statutory requirements described above and in Section 1.1 to reduce bycatch of bottlenose dolphin and listed sea turtles, as well as require more severe management measures than those currently being finalized. More severe

management measures would likely impose more significant economic and social impacts than those associated with the Alternatives currently under consideration. The full extent of these additional impacts, however, cannot be assessed at this time since the more restrictive measures have not been specified.

Foregone or delayed bottlenose dolphin protection risks the imposition of costs to society through the loss of a species that is potentially highly valued by the public. As a protected and non-commercial or recreational resource, consumptive use values do not exist for bottlenose dolphin like they do for other species. However, society likely attaches considerable existence value on the resource along with non-consumptive use value associated with the sighting of the animals during eco-tours and other recreational activities. Although no study currently exists on the value of bottlenose dolphins, contingent valuation work conducted by the University of Maryland (Strand et al. 1994) determined that households in Massachusetts were willing to pay between \$176 and \$364 to eliminate the human induced mortality of 1,000 harbor porpoise. If bottlenose dolphin are similarly valued, continued mortality through incidental take in the oceanic gillnet fisheries could represent significant economic loss to the public, as well as to the businesses dependent upon non-consumptive interactions with the species.

5.3.3 Alternative 2 - BDTRT Draft BDTRP

The BDTRT regulatory recommendations are presented in detail in Section 4.2, Table 32. In summary, this Alternative includes gear length and marking specifications, tending proximity and return to port requirements, night fishing restrictions in various gillnet mesh size fisheries within the ranges of different bottlenose dolphin management units, and seasonal prohibitions on the use of large mesh gillnets in state waters for North Carolina and Virginia. Additionally, gear specification requirements would be required for the beach haul seine fishery. The reader should refer to Section 4.2 for specific details of the recommendations. The resultant expected impact on average annual harvests as a result of implementing the BDTRP are 0-50 percent reductions in the Summer Northern Migratory Management Unit (Virginia, Maryland, Delaware, New Jersey) medium and large mesh fisheries, the Winter Mixed Management Unit Northern and Southern North Carolina medium and large mesh fisheries, and the southern portion of the Virginia large mesh fishery, as well as additional impacts on the large mesh fisheries in North Carolina and Virginia, as discussed below. The gear specification and marking requirements are not expected to impact effort or harvest. Costs associated with the marking requirements are presented below.

The following discussion will present the estimated impacts of the various recommended restrictions by management unit and state/state grouping, using information from Tables 43-48.

Total status quo harvest for the Summer Northern oceanic medium and large mesh gillnet fishery is estimated at 450,000 pounds with an ex-vessel value of \$360,000 for Delaware-Maryland-New Jersey. These estimates represent 16 percent and 22 percent, respectively, of the total annual harvests and ex-vessel revenues for all species, gear and seasons by the participants in this sector. For Virginia, the appropriate numbers are 210,000 pounds (10 percent) with an ex-vessel value of \$100,000 (6 percent). A 50 percent reduction in status quo harvests as a result of the proximity and return to port provisions of this Alternative would result in a harvest reduction of

225,000 pounds in Delaware-Maryland-New Jersey with an ex-vessel value of \$180,000. Total annual harvest would decline by 8 percent (0.50*16 percent), while total annual ex-vessel value would decline by 11 percent (0.50*22 percent). For Virginia, a 50 percent reduction in status quo harvests would result in a harvest reduction of 105,000 pounds with an ex-vessel value of \$50,000. Total annual harvest would decline by 5 percent, while ex-vessel value would decline by 3 percent.

Total status quo harvest for the Winter Mixed Northern North Carolina oceanic medium and large mesh gillnet fishery is estimated at 134,000 pounds with an ex-vessel value of \$102,000. These estimates represent 2 percent and 2 percent, respectively, of the total annual harvests and ex-vessel revenues for all species, gear and seasons by the participants in this sector. A 50 percent reduction in status quo harvests as a result of the night fishing restrictions and the codification of the amended mid-Atlantic large mesh gillnet regulations, for sea turtle conservation, in this Alternative would result in a harvest reduction of 67,000 pounds with an ex-vessel value of \$51,000. Total annual harvest would decline by 1 percent (0.50*2 percent), while total annual ex-vessel value would decline by 1 percent (0.50* 2 percent).

Total status quo harvest for the Winter Mixed Southern North Carolina oceanic medium and large mesh gillnet fishery is estimated at 23,000 pounds with an ex-vessel value of \$16,000. These estimates represent 4 percent and 3 percent, respectively, of the total annual harvests and ex-vessel revenues for all species, gear and seasons by the participants in this sector. A 50 percent reduction in status quo harvests as a result of the night fishing restrictions in this Alternative would result in a harvest reduction of 11,500 pounds with an ex-vessel value of \$8,000. Total annual harvest would decline by 2 percent (0.50*4 percent), while total annual ex-vessel value would decline by 1.5 percent (0.50* 3 percent).

Total status quo harvest for the Winter Mixed Virginia oceanic large mesh gillnet fishery is estimated at 951,000 pounds with an ex-vessel value of \$1.43 million. These estimates represent 12 percent and 28 percent, respectively, of the total annual harvests and ex-vessel revenues for all species, gear and seasons by the participants in this sector. A 50 percent reduction in status quo harvests as a result of the night fishing restrictions in this Alternative would result in a harvest reduction of approximately 476,000 pounds with an ex-vessel value of \$0.72 million. Total annual harvest would decline by 6 percent (0.50*12 percent), while total annual ex-vessel value would decline by 14 percent (0.50* 28 percent).

This Alternative includes the prohibition of night fishing in state waters for large mesh gillnet gear in North Carolina for April 15-December 15. Although this would logically eliminate 50 percent of the harvests by this sector, this Alternative simply codifies North Carolina regulations. Therefore, harvest has already been eliminated by North Carolina regulatory action, and no additional impacts would accrue due to this provision. In fact, 2001 recorded landings for this sector amounted to only 400 pounds with an ex-vessel value of \$100, demonstrating the effectiveness of the state action.

As detailed in Section 4.2, the large mesh gillnet restrictions proposed to accomplish both bottlenose dolphin and sea turtle conservation impose a series of closures that vary by geographic

location. The geographic demarcation of the closures follows neither state border, with three different prohibitions affecting both Virginia and North Carolina, nor the north/south demarcation of North Carolina applicable to the other proposed measures and, thus, complicates the impact assessment. The assessment approach adopted, therefore, translated the different areal and seasonal closures into an estimate of the proportion of total state waters closed on an annual basis, which was then applied to total annual harvests for each respective state.

Under this analytical approach, the sea turtle restrictions, with no exemptions, prohibit the use of large mesh gillnet gear in all Virginia state waters for approximately 75 percent of the year (nine months; it should be noted that the HPTRP imposes an additional one month prohibition in state waters on this gear). Total large mesh gillnet harvest in Virginia is estimated to be 1.12 mp with an ex-vessel value of \$1.65 million. A 75 percent reduction would result in a reduction of approximately 800,000 pounds, valued at \$1.24 million. These estimates equate to a reduction of annual harvests of approximately 8 percent and a reduction in annual ex-vessel revenues of 19 percent for participants in this fishery in the absence of a striped bass exemption. It should be recalled, however, that the actual gear mesh used is not identified in available data. Mesh assignments must be made based on harvest, where trips are assigned to a particular mesh based on whether the harvest of certain species accounted for 50 percent or more of total harvest for that trip. Identification of all large mesh gillnet activity was based on the examination of only three species, monkfish (goosefish), striped bass, and black drum as the target species. Striped bass dominated the trips in Virginia assigned to this gear, accounting for 97 percent of the trips and harvests. Thus, virtually all of the impacts associated with the closures would be associated with striped bass trips. Therefore, a striped bass exemption to the prohibition would almost eliminate any negative impacts associated with this measure in Virginia, though some small amount of harvests of monkfish and black drum may be impacted. The remaining 3 percent of non-striped bass trips accounted for less than 1 percent of total annual harvests and ex-vessel value for the participants in the large mesh gillnet state waters fishery.

The situation is similar in North Carolina. The various closures would result, overall, in all state waters being closed to large mesh gear for approximately 96 percent of the time (approximately 4 percent of state waters would be closed for 8.5 months, 18 percent closed for 10 months, and the remaining 78 percent of the state closed for the entire year). However, the use of this gear was prohibited in the largest portion of state waters since 1996 for 8.5 months of the year due to North Carolina regulations, which extends from Oregon Inlet south to the North Carolina-South Carolina border. Therefore, the effective open season in this area has only been 3.5 months rather than the full year. Factoring this into the assessment results in this portion of the state closed for 2.5 of the available 3.5 months, or approximately 71 percent of the available time. Therefore, additional closure attributed to this Alternative equates to approximately 73 percent of available fishing time rather than 96 percent. Total large mesh harvests are estimated to be approximately 176,500 pounds with an ex-vessel value of \$209,000, and account for approximately 1 percent of total harvest and 1 percent of total ex-vessel value for the participants in this fishery. A 73 percent closure rate, with no exemptions, would result in a reduction of approximately 129,000 pounds of fish, valued at approximately \$153,000, or less than 1 percent reductions in total annual harvests and ex-vessel value for the participants in this fishery. As in VA, however, these trips are essentially all striped bass trips and, thus, a striped bass exemption

would eliminate any negative impacts. It should also be noted that the remaining available month, February 15 through March 15, is closed in both these areas and throughout North Carolina state waters as a result of the HPTRP.

For the states of South Carolina, Georgia, and north and central Florida the net tending proximity provision is not expected to impact harvests or impose additional operational costs. Therefore, no adverse impacts are expected to occur as a result of this provision.

The impacts of revising the beach haul seine fishery gear definition cannot be completely determined. As discussed in Section 3.3.1.1.3, 80 unique entities were identified as having participated in the North Carolina beach seine fishery in the 2001 fishing season. While these participants accounted for approximately \$2.55 million in total ex-vessel revenues across all gears and species, only approximately \$348,000, or 13.6 percent was attributed to beach seine harvests. Although there is likely variation in the amount of harvest and revenue per participant, beach seine revenues, on average, amount to \$4,350 per entity (\$348,000/80). Comment provided during the TRT process indicated that current gear either already met the specified definition or suitable gear was already otherwise available/in the possession of participants. Such information cannot be empirically confirmed, however, so it cannot be determined how many participants would be required to re-gear to meet the requirements. Nevertheless, re-gearing costs are estimated at \$1,600-\$3,000 per net, assuming each net is 400-600 yards and costs \$4-\$5 per yard. Given the average beach seine revenue of \$4,350 per participant and the estimated re-gearing costs, it may not be cost effective for some entities to continue to operate in the fishery. An estimate of the number of participants who would be expected to exit the fishery, however, cannot be determined.

Combining the various incremental impacts (impacts by state, management unit, or regulatory provision) to determine the overall impact of the fishing behavioral restrictions (proximity and night fishing prohibitions) is difficult due to the complexity imposed by the multiple datasets, jurisdictional scope (management unit and net category), overlap of sectoral assessment (the impacts of one sector level assessment cannot be directly added to that of another sector since the totals-all harvests in all sectors by those participants-overlap), and the variety of measures in this Alternative. However, inferences to overall maximum impacts can be drawn from the information provided above. It should be noted, however, that the underlying analytical assumption has been one of various sector harvest reductions of *up to* 50 percent, and thus, the projected impacts represent upper bounds of potential impacts. Actual harvest reductions may be considerably less. Although participants in Delaware-Maryland-New Jersey would only be impacted by provisions for summer fishing, these provisions are projected to result in expected reductions of up to 8 percent of harvests and 11 percent of ex-vessel revenues. Participants in North Carolina would be impacted by new restrictions over the entire year. The impacts are not expected to exceed 2 percent of either harvests or ex-vessel revenues, however. Although Virginia participants would similarly be affected by new restrictions over the course of the year, the restrictions affecting the winter fishery are expected to impose the greatest potential impact, reducing harvests by up to 6 percent and ex-vessel revenues by 14 percent. Overall, total harvest reductions are estimated at up to 885,000 pounds with an ex-vessel value of \$1.009 million. This reduction in value represents approximately 10.4 percent of total oceanic gillnet fishery ex-vessel

revenues, but only 2.57 percent of total revenues from all fisheries by these participants. The respective figures from a poundage perspective are 5.32 percent (oceanic gillnet harvests) and 1.78 percent (all fisheries).

Estimates of the universal gear marking requirements are provided in Table 48. These costs reflect initial purchase of appropriate tags, flags or buoys, as well as the annual labor costs to mark and maintain the markers. Range estimates are generated as a result of variability around the amount of time required per gear unit per year (generally, 3-6 hours per net) and uncertainty associated with the amount of gear actually fished. The gear marking requirements only include those fisheries listed in the table starting with the North Carolina inshore gillnet fishery through the North Carolina roe mullet stop net fishery. The total potential cost of the universal gear marking requirements is estimated as \$1.584-\$3.094 million. This estimate is based on the gear not having any gear marking already. However, most of the fisheries already have gear-marking requirements under state law. Therefore, the majority of the gear marking costs should only be associated with the unique identifier tag, and the costs are thought to be lower than estimate cost stated above. It should also be noted that 63.5-77.6 percent of total costs are costs associated with time expenditures and not direct out-of-pocket expenses. Again though, it should be noted that the majority of time costs and expenditures may be only the initial time it would take to attach or engrave the unique identifier tag. To put the non-time costs in perspective, total average annual oceanic gillnet harvests were estimated to have an ex-vessel value of approximately \$9.703 million (Table 48). Thus, the non-time costs for the oceanic gillnet fisheries represent 6.0 percent to 7.2 percent of total ex-vessel revenues.

5.3.4 Alternative 3 - Prohibit gillnetts within 3 km of shore in all seasonal management units and require gear marking.

This Alternative is expected to result in a 0-50 percent reduction of the average annual harvests for all gillnet mesh sizes from state ocean waters in the ranges of the Summer Northern North Carolina, Summer Northern Migratory, and North Carolina Winter Mixed management units, and a 0-50 percent reduction in the average annual harvests of the small and medium mesh gillnet fishery in the Virginia portion of the Winter Mixed Virginia management unit. Since this regulation would apply to the Summer Southern North Carolina management unit as well, similar harvest reductions are assumed for this area as well. Respective annual and seasonal gillnet performance statistics are provided in Tables 43-48.

Total status quo harvest for the oceanic gillnet fishery for these respective mesh, area and season units is estimated at 15.57 mp with an ex-vessel value of \$8.07 million. A 50 percent reduction in status quo harvests would result in a reduction in harvests of 7.79 mp with an ex-vessel value of \$4.04 million. As a percentage of total annual harvests using all gears by the participants in these fisheries, the reduction in harvest is approximately 16 percent and the reduction in ex-vessel value is approximately 10 percent. This Alternative could, therefore, in the absence of fishing behavioral changes, result in the loss of one-tenth of total annual ex-vessel revenues for those participants who operate in this fishery.

In addition to the universal gear marking requirements under Alternative 2, the requirements under this Alternative add requirements for the Virginia pound net fishery and the Atlantic blue crab pot/trap fishery. The expected costs for all requirements are provided in Table 48. In addition to the expected costs discussed in Section 5.3.3, this Alternative would add an additional \$4.479-\$31.699 million in time costs and an additional \$2.282-\$8.082 million in gear marking costs, for a total of \$8.345-\$42.875 million across all fisheries. Total costs are dominated by costs in the blue crab fishery where the greatest uncertainty associated with the amount of real gear in existence likely occurs. This estimate is based on the gear not having any gear marking already. However, most of the fisheries already have gear-marking requirements under state law. Therefore, the majority of the gear marking costs should only be associated with the unique identifier tag, and it is expected that the costs would be lower than previously estimated. Again, total costs are dominated by costs associated with time expenditures and not direct out-of-pocket expenses. Total non-time expenses for just the non-blue crab fisheries are estimated at \$580,000-\$694,000. The blue crab fishery averaged \$92.53 million in ex-vessel value from 1997-1999 (Section 3.3.1.1.5). Thus, the non-time costs for the blue crab sector represent 2.5 percent to 8.7 percent of total ex-vessel revenues. The majority of time costs and expenditures may be only the initial time it would take to attach or engrave the unique identifier tag onto the gear.

5.3.5 Alternative 4 - Allow gillnet fishing in state waters for no more than 12 consecutive hours (either night or day for entire season) in all seasonal management units and require gear marking.

This Alternative is expected to result in a 0-50 percent reduction of the average annual harvests for all gillnet mesh sizes from state ocean waters in the ranges of the Summer Northern North Carolina, and Summer Northern Migratory management units, a 0-50 percent reduction for the small and medium mesh gillnet fishery in the Virginia Winter Mixed management unit, a 0-25 percent reduction in the average annual harvests of the small and medium mesh gillnet fishery in the North Carolina Winter Mixed management Unit, and a 0-50 percent reduction in the average annual harvests of the large mesh gillnet fishery in the North Carolina Winter Mixed management unit. As with Alternative 3, since this regulation would apply to the Summer Southern North Carolina Management Unit as well, similar harvest reductions are also assumed for this area.

Total status quo harvest for the oceanic gillnet fishery for these respective mesh, area and season units is estimated at 15.07 mp with an ex-vessel value of \$7.78 million. The expected reductions in status quo harvests would result in a reduction in harvests of up to 5.62 mp with an ex-vessel value of \$3.18 million. As a percentage of total annual harvests using all gears by the participants in these fisheries, the reduction in harvests is approximately 11 percent and the reduction in ex-vessel value is approximately 8 percent.

The universal gear marking requirements under this Alternative are identical to those associated with Alternative 3. The expected costs of these requirements are provided in Section 5.3.4 and are incorporated by reference.

5.3.6 Alternative 5 - Prohibit gillnet fishing in state waters, year-round, in all seasonal management units and require gear marking.

This Alternative is expected to result in a 100 percent reduction of the average annual harvests for all gillnet mesh sizes from state ocean waters in the ranges of the management units north of North Carolina.

Total status quo harvest for the oceanic gillnet fishery for these respective mesh, area and season units is estimated at 16.63 mp with an ex-vessel value of \$9.70 million. The expected reductions in status quo harvests would result in a total elimination of these harvests and ex-vessel revenues. As a percentage of total annual harvests using all gears by the participants in these fisheries, the loss of these harvests is approximately 34 percent and the reduction in ex-vessel value is approximately 25 percent. This Alternative could, therefore, in the absence of fishing behavioral changes, result in the loss of up to one quarter of total annual ex-vessel revenues for those participants who operate in this fishery.

The universal gear marking requirements under this Alternative are identical to those associated with Alternative 3. The expected costs of these requirements are provided in Section 5.3.4 and are incorporated by reference.

5.3.7 Alternative 6 - BDTRT Draft BDTRP

This Alternative differs from the Preferred Alternative through the inclusion of requirements that fishermen fishing in the ranges of certain management units haul their gear once a day in state waters when fishing from September 1 through April 30, the requirement of mandatory bycatch certification training, the inclusion of gear marking and beach gear requirements, and seasonally-adjusted closures in the Winter Mixed Northern North Carolina Management Unit. The hauling provision is not enforceable and is not expected to result in any changes in harvests or fishing behavior, so the expected impacts of this Alternative are equal to the fishing practices impacts presented in Section 5.3.3 with respect to Alternative 2 and the gear marking impacts presented in Section 5.3.4. These costs are incorporated by reference. Additional costs would be imposed by the mandatory bycatch certification training, associated with the training itself, as well as potential lost revenues if certification is not obtained at all or in a timely fashion such that fishing is impacted, but these costs are unknown since a specific certification program has not been designed and the amount of fishing that may be impacted due to failure to receive certification cannot be forecast.

5.3.8 Alternative 7 (PREFERRED ALTERNATIVE) - Modified BDTRP Regulatory Recommendations (without gear marking and beach gear requirements, and seasonally-adjusted closures for Virginia and North Carolina state waters) and revise the large mesh gillnet size restriction to 7-inch (17.8 cm) or greater stretched mesh under the mid-Atlantic large mesh gillnet rule (67 FR 71895)

This Alternative varies from that of Alternative 2 (Section 5.3.3) by the elimination of the beach seine measures and gear marking requirements, and revision of the measures to protect sea

turtles. For details on the resultant suite of measures in this Alternative, see Section 4.7. Thus, the impacts of this Alternative are equal to those described in Section 5.3.3 as reduced by the impacts associated with the noted revisions. Although the impacts of Alternative 7 are already described in Section 5.3.3, they will be repeated here, with appropriate modification, to facilitate understanding of the expected impacts of this Preferred Alternative.

This Action includes gear length specifications, tending proximity and return to port requirements, and night fishing restrictions in various gillnet mesh size fisheries within the ranges of different bottlenose dolphin management units, as well as a revision to the large mesh gillnet size restriction. The resultant expected impact on average annual harvests as a result of implementing the BDTRP are 0-50 percent reductions in the Summer Northern Migratory Management Unit (Virginia, Maryland, Delaware, New Jersey) medium and large mesh fisheries, the Winter Mixed Management Unit Northern and Southern North Carolina medium and large mesh fisheries, and the southern portion of the Virginia large mesh fishery, as discussed below.

The following discussion will present the estimated impacts of the various recommended restrictions by management unit and state/state grouping, using information from Tables 43-48.

Total status quo harvest for the Summer Northern oceanic medium and large mesh gillnet fishery is estimated at 450,000 pounds with an ex-vessel value of \$360,000 for Delaware-Maryland-New Jersey. These estimates represent 16 percent and 22 percent, respectively, of the total annual harvests and ex-vessel revenues for all species, gear and seasons by the participants in this sector. For Virginia, the appropriate numbers are 210,000 pounds (10 percent) with an ex-vessel value of \$100,000 (6 percent). A 50 percent reduction in status quo harvests as a result of the proximity and return to port provisions of the Preferred Alternative will result in a harvest reduction of 225,000 pounds in Delaware-Maryland-New Jersey with an ex-vessel value of \$180,000. Total annual harvest will decline by 8 percent (0.50×16 percent), while total annual ex-vessel value will decline by 11 percent (0.50×22 percent). For Virginia, a 50 percent reduction in status quo harvests will result in a harvest reduction of 105,000 pounds with an ex-vessel value of \$50,000. Total annual harvest will decline by 5 percent, while ex-vessel value will decline by 3 percent.

Total status quo harvest for the Winter Mixed Northern North Carolina oceanic medium and large mesh gillnet fishery is estimated at 134,000 pounds with an ex-vessel value of \$102,000. These estimates represent 2 percent and 2 percent, respectively, of the total annual harvests and ex-vessel revenues for all species, gear and seasons by the participants in this sector. A 50 percent reduction in status quo harvests as a result of the night fishing restrictions and the codification of the amended mid-Atlantic large mesh gillnet regulations for sea turtle conservation in the Preferred Alternative will result in a harvest reduction of 67,000 pounds with an ex-vessel value of \$51,000. Total annual harvest will decline by 1 percent (0.50×2 percent), while total annual ex-vessel value will decline by 1 percent (0.50×2 percent).

Total status quo harvest for the Winter Mixed Southern North Carolina oceanic medium and large mesh gillnet fishery is estimated at 23,000 pounds with an ex-vessel value of \$16,000. These estimates represent 4 percent and 3 percent, respectively, of the total annual harvests and

ex-vessel revenues for all species, gear and seasons by the participants in this sector. A 50 percent reduction in status quo harvests as a result of the night fishing restrictions in the Preferred Alternative will result in a harvest reduction of 11,500 pounds with an ex-vessel value of \$8,000. Total annual harvest will decline by 2 percent (0.50×4 percent), while total annual ex-vessel value will decline by 1.5 percent (0.50×3 percent).

Total status quo harvest for the Winter Mixed Virginia oceanic large mesh gillnet fishery is estimated at 951,000 pounds with an ex-vessel value of \$1.43 million. These estimates represent 12 percent and 28 percent, respectively, of the total annual harvests and ex-vessel revenues for all species, gear and seasons by the participants in this sector. A 50 percent reduction in status quo harvests as a result of the night fishing restrictions in the Preferred Alternative will result in a harvest reduction of approximately 476,000 pounds with an ex-vessel value of \$0.72 million. Total annual harvest will decline by 6 percent (0.50×12 percent), while total annual ex-vessel value will decline by 14 percent (0.50×28 percent).

The Preferred Alternative includes the prohibition of night fishing in state waters for large mesh gillnet gear in North Carolina for April 15-December 15. Although this will logically eliminate 50 percent of the harvests by this sector, the Preferred Alternative simply codifies North Carolina regulations. Therefore, harvest has already been eliminated by North Carolina regulatory action, and no additional impacts will accrue due to this provision. In fact, 2001 recorded landings for this sector amounted to only 400 pounds with an ex-vessel value of \$100, demonstrating the effectiveness of the state action.

For the states of South Carolina, Georgia, and north and central Florida the net-tending proximity provision is not expected to impact harvests or impose additional operational costs. Therefore, no adverse impacts are expected to occur as a result of this provision.

Combining the various incremental impacts (impacts by state, management unit, or regulatory provision) to determine the overall impact of the fishing behavioral restrictions (proximity and night fishing prohibitions) is difficult due to the complexity imposed by the multiple datasets, jurisdictional scope (management unit and net category), overlap of sectoral assessment (the impacts of one sector level assessment cannot be directly added to that of another sector since the totals - all harvests in all sectors by those participants - overlap), and the variety of measures in the Preferred Alternative. However, inferences to overall maximum impacts can be drawn from the information provided above. It should be noted, however, that the underlying analytical assumption was one of various sector harvest reductions of *up to* 50 percent, and thus, the projected impacts represent upper bounds of potential impacts. Actual harvest reductions may be considerably less. Although participants in Delaware-Maryland-New Jersey will only be impacted by provisions for summer fishing, these provisions are projected to result in expected reductions of up to 8 percent of harvests and 11 percent of ex-vessel revenues. Participants in North Carolina will be impacted by new restrictions over the entire year. The impacts are not expected to exceed 2 percent of either harvests or ex-vessel revenues, however. Although Virginia participants will similarly be affected by new restrictions over the course of the year, the restrictions affecting the winter fishery are expected to impose the greatest potential impact, reducing harvests by up to 6 percent and ex-vessel revenues by 14 percent. Overall, total harvest

reductions are estimated at up to 885,000 pounds with an ex-vessel value of \$1.009 million. This reduction in value represents approximately 10.4 percent of total oceanic gillnet fishery ex-vessel revenues, but only 2.57 percent of total revenues from all fisheries by these participants. The respective figures from a poundage perspective are 5.32 percent (oceanic gillnet harvests) and 1.78 percent (all fisheries).

5.4 PRIVATE AND PUBLIC COSTS

The preparation, implementation, enforcement and monitoring of this or any federal action involves the expenditure of public and private resources that can be expressed as costs associated with the regulations. Costs associated with this specific action include:

NMFS administrative costs of document preparation, meetings, public hearings, document review, and information.....	\$ 1,201,000
Law enforcement costs.....	\$ 0
TOTAL.....	\$ 1,201,000

The federal costs are based on estimates of staff time, travel, printing and any other relevant items where funds were expended directly for this specific action. The specific activities included in the above total are the costs associated with conducting the active BDTRT (\$680,000), developing the proposed rule (\$359,000), and developing the final rule (\$162,000). Not included in these costs are approximately \$4.33 million in expenses for surveys and labor that were expended in monitoring the bottlenose dolphin and determining the need to convene the BDTRT. An additional \$3 million, annually, is estimated to be required for the non-regulatory components of the rule, which include outreach and education (\$112,000), gear research (\$392,000), observer coverage (1,919,700), improvements to the National Stranding Network (\$85,650), and reconvening the BDTRT (\$271,420). Excluding expenditures incurred prior to the determination that a BDTRP was necessary, the total cost of the BDTRP (including BDTRT activities) and annual implementation and monitoring in the non-regulatory components is estimated to be \$4 million. Enforcement of the measures contained in this action will occur as part of routine and customary enforcement activities. Further, enforcement budgets are not developed by per fishery or enforcement measure. Therefore, specific funds will not be dedicated to the enforcement of the measures in this action.

5.5 SUMMARY OF ECONOMIC IMPACTS

Under the analytical assumption that the various management measures will result in sector harvest reductions of up to 50 percent, participants in Delaware-Maryland-New Jersey are projected to experience reductions of up to 8 percent in harvests and 11 percent in ex-vessel revenues. Participants in North Carolina are projected to experience reductions in harvests and ex-vessel revenues of not more than 2 percent. Virginia participants in the winter fishery are projected to experience the greatest potential impact; a reduction in harvests of up to 6 percent

and ex-vessel revenues of 14 percent. Total harvest reductions across all areas and fishery sectors, assuming the full 50 percent harvest reductions in the respective sectors, are estimated at \$1.009 million. This estimate should be considered an upper bound since it incorporates the maximum harvest reduction and does not allow redirection of harvest effort.

5.6 DETERMINATION OF SIGNIFICANT REGULATORY ACTION

Pursuant to E.O. 12866, a regulation is considered a "significant regulatory action" if it is likely to result in: a) an annual effect on the economy of \$100 million or more; b) a major increase in costs or prices for consumers, individual industries, federal, state, or local government agencies, or geographic regions; c) significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets; or d) raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this Executive Order.

As described in Section 5.5, the total expected costs of this Preferred Alternative are estimated to be between \$1.009 million. Thus, the effects will not exceed the \$100 million threshold on an annual basis.

Although the measures in this rule may result in the reduction of up to 885,000 pounds in harvests, the reductions will occur across five states and encompass so many species that no price effects can reasonably be expected. No significant adverse effects on employment or other business related aspects are expected.

The measures in this amendment do not interfere or create inconsistency with any action of another agency, including state fishing agencies. The measures do not raise novel legal and policy issues.

The foregoing discussion establishes the basis for the conclusion that this amendment, if enacted, will not constitute a significant regulatory action.

Table 43: Summary statistics by combined mesh size and season for participants in the Delaware, Maryland and New Jersey oceanic gillnet fishery, 2001 fishing season. These statistics include all harvests, ex-vessel value, and trips by these participants, regardless of the gear used. NOTE: no two cells are additive due to overlap.

Season	Mesh Size	Harvest (lbs)	% Annual*	Ex-vessel Value	% Annual*	
Summer	Small + Medium	1,400,000	44%	\$550,000	30%	
	Medium + Large	450,000	16%	\$360,000	22%	
	All Gillnets	1,810,000	57%	\$880,000	48%	
Winter	Small + Medium	330,000	11%	\$120,000	7%	
	Medium + Large	890,000	28%	\$690,000	38%	
	All Gillnets	1,140,000	36%	\$780,000	43%	

* “% Annual” refers to the percent of the current “sector” harvest/revenue (all species by mesh size and season) relative to the total annual harvests/revenue (all species, all gear, all seasons) by the same individual fishing entities that contributed to the sector total. The values indicate the relative importance of harvests at that sector level to total annual harvests by these participants.

Table 44: Summary statistics by combined mesh size and season for participants in the Virginia oceanic gillnet fishery, 2001 fishing season. These statistics include all ocean water harvests (water body codes 625 or 631), ex-vessel value, and trips by these participants. NOTE: no two cells are additive due to overlap.

Season	Mesh Size	Harvest (lbs)	% Annual*	Ex-vessel Value	% Annual*	
Summer	Small + Medium	740,000	17%	\$570,000	15%	
	Medium + Large	210,000	10%	\$100,000	6%	
	All Gillnets	760,000	16%	\$600,000	15%	
Winter	Small + Medium	1,340,000	18%	\$1,040,000	16%	
	Medium + Large	1,320,000	12%	\$1,760,000	17%	
	All Gillnets	2,400,000	22%	\$2,670,000	26%	

* “% Annual” refers to the percent of the current “sector” harvest/revenue (all species by mesh size and season) relative to the total annual harvests/revenue (all species, all gear, all seasons) by the same individual fishing entities that contributed to the sector total. The values indicate the relative importance of harvests at that sector level to total annual harvests by these participants.

Table 45: Summary statistics by combined mesh size and season for participants in the North Carolina ocean (0-3 miles) gillnet fishery, 2001 fishing season. These statistics include all harvests landed north of Cape Lookout, ex-vessel value, and trips by these participants. NOTE: no two cells are additive due to overlap. Cells may also be equal due to rounding.

Season	Mesh Size	Harvest (lbs)	% Annual*	Ex-vessel Value	% Annual*	
Summer	Small + Medium	1,454,000	14%	\$1,061,000	16%	
	Medium + Large	134,000	2%	\$102,000	2%	
	All Gillnets	1,455,000	14%	\$1,061,000	16%	
Winter	Small + Medium	6,967,000	28%	\$2,568,000	15%	
	Medium + Large	646,000	4%	\$476,000	4%	
	All Gillnets	7,130,000	26%	\$2,763,000	13%	

* “% Annual” refers to the percent of the current “sector” harvest/revenue (all species by mesh size and season) relative to the total annual harvests/revenue (all species, all gear, all seasons) by the same individual fishing entities that contributed to the sector total. The values indicate the relative importance of harvests at that sector level to total annual harvests by these participants.

Table 46: Summary statistics by combined mesh size and season for participants in the North Carolina ocean (0-3 miles) gillnet fishery, 2001 fishing season. These statistics include all harvests landed in Cape Lookout and southward, ex-vessel value, and trips by these participants.

NOTE: no two cells are additive due to overlap. Cells may also be equal due to rounding.

Season	Mesh Size	Harvest (lbs)	% Annual*	Ex-vessel Value	% Annual*	
Summer	Small + Medium	712,000**	19%	\$351,000	11%	
	Medium + Large	23,000	4%	\$16,000	3%	
	All Gillnets	712,000	19%	\$351,000	11%	
Winter	Small + Medium	1,215,000	28%	\$584,000	14%	
	Medium + Large	22,000	3%	\$18,000	3%	
	All Gillnets	1,228,000	26%	\$599,000	13%	

* “% Annual” refers to the percent of the current “sector” harvest/revenue (all species by mesh size and season) relative to the total annual harvests/revenue (all species, all gear, all seasons) by the same individual fishing entities that contributed to the sector total. The values indicate the relative importance of harvests at that sector level to total annual harvests by these participants.

**Summer totals for the “small+medium” and “all gillnets” sectors are equal since no Summer large mesh trips were recorded for the oceanic (0-3 miles) gillnet fishery.

Table 47: Annual harvests and ex-vessel revenues from oceanic gillnet fishery, 2001 fishing season. These statistics include all harvests landed on trips designated as a gillnet trip based on species harvested.

Area	Harvest (lbs)	% Annual*	Ex-vessel Value	% Annual*	
Delaware-Maryland-New Jersey	2,950,000	92%	\$1,660,000	90%	
Virginia	3,160,000	28%	\$3,270,000	30%	
North Carolina	10,525,000	30%	\$4,773,000	18%	

* “% Annual” refers to the percent of the current “sector” harvest/revenue (all species by mesh size and season) relative to the total annual harvests/revenue (all species, all gear, all seasons) by the same individual fishing entities that contributed to the sector total. The values indicate the relative importance of harvests at that sector level to total annual harvests by these participants.

Table 48: Universal gear marking costs.

Fishery	Burden Hours	Time Cost*	Tag/Flag/Buoy Cost	Total Cost
North Carolina Inshore Gillnet	11,970-23,940	\$120,000-\$239,000	\$65,000	\$185,000-\$304,000
Southeast Atlantic Gillnet	48,000-96,000	\$480,000-\$960,000	\$278,000	\$758,000-\$1,238,000
Southeastern Shark Gillnet	72-144	\$1,000	-**	\$1,000
Mid-Atlantic Coastal Gillnet	39,300-117,900	\$393,000-\$1,179,000	\$228,000-\$342,000	\$621,000-\$1,521,000
Mid-Atlantic Haul/Beach Seine	125	\$1,000	\$1,000	\$2,000
North Carolina Long Haul Seine	990-1,980	\$10,000-\$20,000	\$6,000	\$16,000-\$26,000
North Carolina Roe Mullet Stop Net	78-156	\$1,000-\$2,000	-**	\$1,000-\$2,000
Sub-total		\$1.006-\$2.402 million	\$578,000-\$692,000	\$1.584-\$3.094 million
Virginia Pound Net	540-1,080	\$5,000-\$11,000	\$2,000	\$7,000-\$13,000
Atlantic Blue Crab Pot/Trap	447,400-3,168,800	\$4,474,000-\$31,688,000	\$2,280,000-\$8,080,000	\$6,754,000-\$39,768,000
Total All		\$5.485-\$34.101 million	\$2.860-\$8.774 million	\$8.345-\$42.875 million

* Valued at \$10 per hour.

** Less than \$1,000.

6.0 SOCIAL IMPACT ASSESSMENT

6.1 INTRODUCTION

Social Impact Assessments (SIAs) are not specifically required by the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) or the NEPA. However, NEPA does require federal agencies to consider the impacts of proposed and final regulations on the quality of the human environment including the natural and physical environment and the relationship of people with that environment. Recent amendments to the MSFCMA require that FMPs address the impacts of any management measures on the participants in the affected fishery and those participants in other fisheries who may be affected directly or indirectly. Most recently, with the addition of National Standard 8, FMPs must now consider the impacts upon fishing communities to assure their sustained participation and minimize adverse economic impacts upon those communities. Consideration of social impacts is a growing concern as fisheries experience increased participation and/or declines in stocks. With an increasing need for management action, the consequences of such changes need to be examined in order to mitigate the negative impacts experienced by the populations concerned. Thus, the descriptions and discussion of the data sources and fishing communities potentially affected by the Preferred Alternative are provided in Section 3.3. The following discussion is based on this information.

6.1.1 Impact Assessment

6.1.1.1 Alternative 1 - No-Action

Under the No-action Alternative, there would be no direct short-term impacts on the fishermen, families, or communities in the Atlantic coastal communities since this Alternative would allow status quo operation of fishing activities and would not change current fishing practices. However, if actions are not taken now to reduce the bycatch of bottlenose dolphins and sea turtles, it may be necessary to take more aggressive measures at a later date to protect these species. If more aggressive actions are warranted in the future to protect these species, then there may be added costs, loss of employment, or other changes in fishing practices that could lead to changes in the community structure amongst people involved in the fishing industry.

Under the No-Action Alternative, bottlenose dolphin and sea turtles would continue to experience incidental injuries and mortality as bycatch. This would be a loss to society and impact those who enjoy seeing bottlenose dolphins and sea turtles in the wild and those who are concerned with helping to preserve bottlenose dolphins and sea turtles for their intrinsic value. Also, failure to protect these species would add to the continuing decline and loss of species and biodiversity of the planet, thus contributing to a degradation of general life quality and values.

6.1.1.2 Alternative 2 - BDTRT Draft BDTRP

In large part, this Alternative would implement the BDTRT's recommendations regarding a variety of restrictions including time/area prohibitions, proximity requirements, gear marking, mesh size requirements, and net length restrictions. However, this Alternative differs from

Alternative 6, the BDTRT's recommendation, in that this Alternative more fully addresses sea turtle conservation needs, and does not require mandatory bycatch certification training, a requirement to haul gear once every 24 hours in the small mesh gillnet fisheries in the North Carolina portion of the Winter Mixed Management Unit and the summer Northern North Carolina Management Unit, or gear marking requirements for the Virginia pound net or Atlantic blue crab pot/trap fisheries.

Due to the limited amount of information available on fishing communities in the mid-Atlantic, it is not possible to predict with any certainty what impact these recommendations would have on the fishermen, fishing dependent businesses, and the communities where these fishermen and businesses reside and conduct business. A total of 3,079 entities were identified as having recorded landings in the 2001 fishing season using gillnet gear in North Carolina through New Jersey. It is unknown, however, how many individuals, family units, other businesses, etc., are encompassed by these entities and associated businesses and communities. As described in Section 5.3, there is an expectant impact on fishery effort and average annual harvests for the various fisheries of reductions of 0-50 percent. These reductions may have varying impacts on the fishermen, fishing-dependent businesses, and the fishing communities depending on the amount of the reduction in harvest for a respective fishery, and the relative importance of that harvest to overall harvest activity for those fishermen and respective businesses and communities.

For those areas subject to restrictions on night fishing, net tending and proximity rules, there may be a reduction in harvest. The BDTRP assumed a reduction in harvest of 0-50 percent. Due to the lack of sufficient data regarding the way individual fishermen fish with gillnets, it is impossible to quantify how many fishermen leave their nets unattended for more than 12 hours, or are generally within a certain distance of their nets while fishing. Likewise, it is not possible to know for certain the incidence of night fishing and the impacts of regulations that restrict night fishing and require that gear be brought back to port at night. Further, it is unknown how many nets are routinely deployed by fishermen and the impact that the net proximity regulations might have on the ability to deploy multiple nets. Overall, therefore, it is unknown what behavioral changes would occur as a result of the rule and, therefore, where within the 0-50 percent range is a more accurate representation of expected harvest reductions or whether the range itself is appropriate.

Nevertheless, conceptually, if fishermen are restricted from fishing at night, or required to return their gear to port each night, they would incur increased expenses due to the increased amount of fuel required to travel to and from port each day. Other impacts could occur if fishermen are forced to alter the number of nets they set or pull them sooner than they otherwise would. This could produce reduced harvests for each trip, which would reduce profits per trip. Fishermen often try to maximize the amount of fish they catch with each trip by staying out longer, conserving fuel, setting more nets, or leaving nets in the water until they have a sufficient catch. If the restrictions lead to a reduction in harvest, there would be a potential loss of income, and potentially the loss of jobs if less fish are landed commercially, or if the costs increase for each

individual fishing trip. If there are less fish landed, this would also impact the fishing dependent businesses, and the communities in the areas where fish are landed. As described in Section 5.3.3, total ex-vessel revenue losses associated with the rule are estimated at \$1.009 million. This represents 5.32 percent of oceanic gillnet harvests and 10.4 percent of ex-vessel revenue, and 1.78 percent of total harvests by these participants and 2.57 percent of ex-vessel value. As also described, these reductions range from no impact in some fisheries/areas, to over 10 percent in others (the Delaware-Maryland-New Jersey Summer Northern medium and large mesh gillnet fisheries and the Virginia Winter Mixed large mesh gillnet fishery). More acute potential impacts would be expected for the communities in those areas expected to experience the most severe reductions. Available information on communities was provided in Section 3.3.2.

As previously stated, the analysis for this Plan assumes that fishermen would not shift from one fishery to another, as new regulations are imposed on the fishery they now participate in. However, fishermen may in fact adapt to the new regulations by changing the way in which they fish, or switch to another fishery, if feasible, to continue to make the same amount of income from fishing. New restrictions on the way people fish may force some fishermen to seek other types of employment to supplement their income. Some fishermen may choose to leave the industry altogether for a new profession if it is not economically feasible to change their current fishing practices, or they cannot switch to another fishery. Obviously, changes to the amount of fish harvested, or changes in the number of fishermen involved in a particular fishery, would have impacts on the people in fishing dependent businesses and on the fishing communities. Such movements, however, cannot be predicted at this time. It should be noted, however, that as fishermen continue to be subjected to an increasingly restrictive regulatory environment, they face an increasingly limited set of options for relocation to other fisheries or modification of their fishing behavior.

Fishermen would incur additional costs due to the requirements for marking their gear. These costs were estimated at \$578,000-\$692,000 for gear marking requirements and an additional 101,000-240,000 hours valued at \$1.006-\$2.402 million. This estimate is based on the initial costs to comply with the requirement. However, it should be noted that the gear marking requirement is already required under state laws for all the fisheries. Hence, in reality the only initial cost should be the purchase of the unique identifier tag and the time associated to attach the tag to the gear. It is expected that only minimal time should be dedicated on a monthly basis to inspecting and repairing any of the gear marking requirements since the only maintenance should be to replace the tag if it is lost or damaged. Besides the increased costs associated with gear marking, which may contribute to an inability to continue to participate in the fishery, time spent in marking gear may have even more significant social or community impacts since it could be time that was spent fishing, resulting in a loss of potential revenue, time employed in other jobs, or time spent pursuing other activities around the home, with their families, with others in the community, or other activities that define the quality of one's life.

Similar results are also expected due to the restrictions on various mesh sizes and length of nets, which vary in the different management units. Any regulation that forces fishermen to modify or

change their gear would result in fishermen incurring additional costs, further contributing to decreased profits.

Generally, the intent of these Alternatives is to help reduce the bycatch of bottlenose dolphins and sea turtles. Any reduction of harm to these resources would be a positive impact on preserving these species for their intrinsic value and preservation of marine biodiversity. The impacts of such benefits on fishing communities, however, cannot be quantified.

6.1.1.3 Alternative 3 - Prohibit gillnets within 3 km of shore in all seasonal management units and require gear marking

The general statements on the potential fishing community impacts of further regulation contained in Section 6.1.1.2 are relevant to this Alternative as well and are incorporated by reference. In general, these statements can be summarized to conclude that where the new regulations result in lower harvests and ex-vessel revenues, and/or other changes in fishing methods or patterns such that costs increase and/or otherwise decrease profits, and other additional demands for a fishermen's time, these impacts would spill over into other aspects of the fishermen's life and associated communities. The more severe the impact on harvests, revenues and time, the more severe the spill-over effects. This Alternative is projected to reduce the average annual harvest from state oceanic waters by 7.79 mp and reduce ex-vessel revenues by \$4.04 million. As with the previous Alternative, due to the limited amount of information on fishing communities in the mid-Atlantic, it is not possible to predict how many fishermen and others involved with the fishing industry would be impacted by this Alternative. The loss in ex-vessel revenue, however, is 300 percent greater than that expected to result from the Preferred Alternative and, thus, would be expected to produce significantly greater adverse impacts on the respective fishing communities.

Under this Alternative, in order for fishermen who normally fish within 3 km of land to continue to make an income from fishing comparable to what they currently receive, they would need to re-direct their effort on fisheries that are either prosecuted in waters greater than 3 km from shore, or utilize different gear for near shore fishing. For some, this would mean an increase in the amount of fishing they already conduct in the offshore waters. For others, it may mean switching to a different fishery altogether. Due to the added costs and lost revenues relative to the Preferred Alternative, it is likely that the pressure to exit the fishery would be greater under this Alternative. Further, due to other regulations that limit participation in these other fisheries, it may not be feasible for all fishermen to increase their participation in offshore fisheries, or to switch to another fishery. This would further increase the likelihood of fishery exit, with accompanying adverse community impacts.

As a result of some participants altering their fishing behavior, this Alternative would be expected to add to the competition over fish and fishing grounds with the people who already fish in these areas or fisheries. This may lead to the landing of less fish by all participants, increased costs, and may add to the time that boats must be out for each trip, similar to that

described above. The key point, however, is since the impacts expected under this Alternative are so much greater than those under the Preferred Alternative, there is an increase in the likelihood of spillover effects in other areas and fisheries, and adverse community impacts spread beyond the fishermen and communities impacted by the initial set of regulations. Further, added pressure and deteriorating conditions in these fisheries may precipitate additional regulation in these fisheries, thus compounding the adverse impacts of the original action.

This Alternative would impose a significantly greater burden on fishermen than the Preferred Alternative partly as a result of the additional gear marking requirements for the blue crab and pound net fisheries. Burden hours increase from an estimated maximum of 240,000 hours to a potential of over 3 million hours, while gear marking apparatus costs increase from a maximum of \$692,000 to potentially greater than \$8 million. As with the Preferred Alternative, the increased costs associated with the gear marking requirements increase the likelihood that continued operation in the fishery may not be economically feasible. The increased time burden spent in marking gear also further increases the potential likelihood of significant societal or community impacts due to the diminished flexibility to devote this time to fishing, resulting in a loss of potential revenue, as well as time devoted to other jobs, or pursuing other activities around the home, with one's families or others in the community, or pursuing other activities that define the quality of one's life.

Generally, the intent of these Alternatives is to help reduce the bycatch of bottlenose dolphins and sea turtles. Any reduction of harm to this resource would be a positive impact in terms of helping to preserve the species for their intrinsic value and for protection of these species and preservation of marine biodiversity. The impacts of such benefits on fishing communities, however, cannot be quantified.

6.1.1.4 Alternative 4 - Allow gillnet fishing in state waters for no more than 12 consecutive hours (either night or day for entire season) in all seasonal management units

The general statements on the potential fishing community impacts of further regulation contained in Section 6.1.1.2 are relevant to this Alternative as well and are incorporated by reference. This Alternative is projected to reduce the average annual harvest from state oceanic waters by 5.62 mp and reduce ex-vessel revenues by \$3.18 million. Due to the limited amount of information on fishing communities in the mid-Atlantic, it is not possible to predict how many fishermen and others involved with the fishing industry would be impacted by this Alternative. The loss in ex-vessel revenue, however, is approximately 215 percent greater than that expected to result from the Preferred Alternative and, thus, would be expected to produce significantly greater adverse impacts on the respective fishing communities.

Under this Alternative, fishermen who normally deploy their gear for longer than 12 consecutive hours would be required to modify their fishing behavior. This may include both retrieving nets faster than they otherwise would and/or deploying fewer nets due to the added labor associated with pulling nets more frequently. These behavioral changes would be expected to potentially

impact both their costs and harvests, such that it may not be feasible to continue to operate in their current fishery. This could result in switching to a different fishery or ceasing fishing altogether. Due to the added costs and lost revenues relative to the Preferred Alternative, it is likely that the pressure to exit the fishery would be greater under this Alternative than under the Preferred Alternative. Further, due to other regulations that limit participation in other fisheries, it may not be feasible for all fishermen who wish to redirect their effort to other fisheries. This would further increase the likelihood of fishery exit, with accompanying adverse community impacts

As with the previous Alternative, as a result of some participants altering their fishing behavior, this Alternative would be expected to add to the competition over fish and fishing grounds with the people who already fish in these areas or fisheries. This may lead to the landing of less fish by all participants, increased costs, and may add to the time that boats must be out for each trip, as described above. Since the impacts expected under this Alternative are so much greater than those under the Preferred Alternative, there is an increase in the likelihood of spillover effects in other areas and fisheries, and adverse community impacts spread beyond the fishermen and communities impacted by the initial set of regulations. Further, added pressure and deteriorating conditions in these fisheries may precipitate additional regulation in these fisheries, thus compounding the adverse impacts of the original action.

This Alternative would impose a significantly greater burden on fishermen than the Preferred Alternative as a result of the additional gear marking requirements for the blue crab fishery. Burden hours increase from an estimated maximum of 240,000 hours to a potential of over 3 million hours, while gear marking costs increase from a maximum of \$692,000 to potentially greater than \$8 million. As with the Preferred Alternative, the increased costs associated with gear marking requirement increase the likelihood that continued operation in the fishery may not be economically feasible. The increased time spent in marking gear also further increases the potential likelihood of significant societal or community impacts due to the diminished flexibility to devote this time to fishing, resulting in a loss of potential revenue, other jobs, or pursuing other activities around the home, with one's families or others in the community, or pursuing other activities that define the quality of one's life.

Generally, the intent of these Alternatives is to help reduce bycatch of bottlenose dolphins and sea turtles. Any reduction of harm to this resource would be a positive impact in terms of helping to preserve these species for their intrinsic value and for protection of the species and preservation of marine biodiversity. The impacts of such benefits on fishing communities, however, cannot be quantified.

6.1.1.5 Alternative 5 - Prohibit gillnet fishing in state waters, year-round, in all seasonal management units and require gear marking

The general statements on the potential fishing community impacts of further regulation contained in Section 6.1.1.2 are relevant to this Alternative as well and are incorporated by reference. This Alternative would totally eliminate all harvests from the oceanic gillnet fishery in state waters for North Carolina through New Jersey. This would reduce the average annual harvest from state oceanic waters by 16.63 mp and reduce ex-vessel revenues by \$9.7 million. Due to the limited amount of information on fishing communities in the mid-Atlantic, it is not possible to predict how many fishermen and others involved with the fishing industry would be impacted by this Alternative. The loss in ex-vessel revenue, however, is approximately 861 percent greater than that expected to result from the Preferred Alternative and, thus, would be expected to produce significantly greater adverse impacts on the respective fishing communities.

Under this Alternative, all fishing with gillnets in the state oceanic waters would be required to cease. Response to these lost harvests and revenues would require substantial redirection of effort into other fisheries, with resultant adverse impacts on these fisheries, diminishing both the potential of the new entrants to recoup their losses as well as jeopardizing the ability of current participants in these fisheries to maintain their performance. Alternatively, ceasing fishing altogether through either retirement or seeking other employment would be required. The added pressure in the target fisheries would further increase the likelihood of fishery exit, with accompanying adverse community impacts. Since the impacts expected under this Alternative are so much greater than those under the Preferred Alternative, the likelihood of spillover effects in other areas and fisheries, and adverse community impacts spread beyond the fishermen and communities impacted by the initial set of regulations is a certainty. Further, the total elimination of these harvests would be expected to have even greater impacts on onshore dealers and processing facilities since alternative sources of similar product are unlikely to materialize.

As with the previous Alternative, this Alternative would impose a significantly greater burden on fishermen over those expected to occur under the Preferred Alternative as a result of the additional gear marking requirements for the blue crab and pound net fisheries. Burden hours increase from an estimated maximum of 240,000 hours to a potential of over 3 million hours, while gear marking apparatus costs increase from a maximum of \$692,000 to potentially greater than \$8 million. As with the Preferred Alternative, the increased costs associated with the gear marking apparatus increase the likelihood that continued operation in the fishery may not be economically feasible. The increased time burden spent in marking gear also further increases the potential likelihood of significant societal or community impacts due to the diminished flexibility to devote this time to fishing, resulting in a loss of potential revenue, other jobs, or pursuing other activities around the home, with one's families or others in the community, or pursuing other activities that define the quality of one's life.

Generally, the intent of these Alternatives is to help reduce the bycatch of bottlenose dolphins and sea turtles. Any reduction of harm to this resource would be a positive impact in terms of

helping to preserve these species for their intrinsic value and for protection of the species and preservation of marine biodiversity. The impacts of such benefits on fishing communities, however, cannot be quantified. Since this Alternative would totally prohibit fishing with gillnet gear in this area, this Alternative logically has the potential to protect the greatest number of bottlenose dolphins and sea turtles. While any bycatch is regrettable, the bycatch reduction expected under this Alternative may be greater than is necessary, when contrasted with the level of cost to fishermen and their communities.

6.1.1.6 Alternative 6 - BDTRT Draft BDTRP

The BDTRT recommendations include all requirements included in the Preferred Alternative plus mandatory bycatch certification training, a requirement to haul gear once every 24 hours in the small mesh gillnet fisheries in the North Carolina portion of the Winter Mixed and the Summer Northern North Carolina management units, and gear marking requirements for the Virginia pound net and Atlantic blue crab pot/trap fisheries. The description of impacts of the Preferred Alternative, therefore, apply here as well, and are incorporated by reference. The absolute cost of a mandatory bycatch certification training requirement is not able to be quantified, as training and recertification would need to continue indefinitely. The gear-hauling requirement is not expected to be enforceable and, therefore, not expected to alter current fishing practices or harvests. Thus, the impacts of this Alternative on harvests and ex-vessel revenues are as previously noted, a reduction in harvests of approximately 885,000 pounds and a loss of ex-vessel revenues of \$1.009 million.

The primary difference between the expected impacts of the Preferred Alternative and this Alternative are the increased time and expense associated with the gear marking requirements. As previously described under Alternative 3, this Alternative would impose a significantly greater burden on fishermen than the Preferred Alternative as a result of the additional gear marking requirements for the blue crab and pound net fisheries. Burden hours increase from an estimated maximum of 240,000 hours under the Preferred Alternative to a potential of over 3 million hours, while gear marking costs increase from a maximum of \$692,000 under the Preferred Alternative to potentially greater than \$8 million. The increased costs associated with gear marking increase the likelihood that continued operation in the fishery may not be economically feasible. The increased time spent marking gear also further increases the potential likelihood of significant societal or community impacts due to the diminished flexibility to devote this time to fishing, resulting in a loss of potential revenue, as well as time devoted to other jobs, the pursuit of other activities around the home, with one's families or others in the community, or the pursuit of other activities that define the quality of one's life.

6.1.1.7 Alternative 7 (PREFERRED ALTERNATIVE) - Modified BDTRP Regulatory Recommendations (without gear marking and beach gear requirements, and seasonally-adjusted closures for Virginia and North Carolina state waters) and revise the large mesh gillnet size restriction to 7-inch (17.8 cm) or greater stretched mesh under the mid-Atlantic large mesh gillnet rule (67 FR 71895)

This Alternative varies from that of Alternative 2 by the elimination of the beach seine measures and gear marking requirements, and revision of the measures to protect sea turtles. Thus, the impacts of this Alternative are equal to those described in Section 6.1.1.2, as reduced by the impacts associated with the noted revisions. Although the impacts of Alternative 7 are described in Section 6.1.1.2, they will be repeated here, with appropriate modification, to facilitate understanding of the expected impacts of the Preferred Alternative.

In large part, this Alternative will implement the BDTRT's recommendations regarding a variety of restrictions including time/area prohibitions, proximity requirements, gear marking, mesh size requirements, and net length restrictions. However, this Alternative differs from the BDTRT's recommendation, in that this Alternative does not require mandatory bycatch certification training, a requirement to haul gear once every 24 hours in the small mesh gillnet fisheries in the North Carolina portion of the Winter Mixed Management Unit and the summer Northern North Carolina Management Unit, beach gear operating requirements, or gear marking requirements.

Due to the limited amount of information available on fishing communities in the mid-Atlantic, it is not possible to predict with any certainty what impact these recommendations will have on the fishermen, fishing dependent businesses, and the communities where these fishermen and businesses reside and conduct business. A total of 3,079 entities were identified as having recorded landings in the 2001 fishing season using gillnet gear in North Carolina through New Jersey. It is unknown, however, how many individuals, family units, other businesses, etc., are encompassed by these entities and associated businesses and communities. As described in Section 5.3, there is an expectant impact on fishery effort and average annual harvests for the various fisheries of reductions of 0-50 percent. These reductions may have varying impacts on the fishermen, fishing-dependent businesses, and the fishing communities depending on the amount of the reduction in harvest for a respective fishery, and the relative importance of that harvest to overall harvest activity for those fishermen and respective businesses and communities.

For those areas subject to restrictions on night fishing, net tending and proximity rules, there may be a reduction in harvest. The BDTRP assumed a reduction in harvest of 0-50 percent. Due to the lack of sufficient data regarding the way individual fishermen fish with gillnets, it is impossible to quantify how many fishermen leave their nets unattended for more than 12 hours, or are generally within a certain distance of their nets while fishing. Likewise, it is not possible to know for certain the incidence of night fishing and the impacts of regulations that restrict night fishing and require that gear be brought back to port at night. Further, it is unknown how many nets are routinely deployed by fishermen and the impact that the net proximity regulations might have on the ability to deploy multiple nets. Overall, therefore, it is unknown what behavioral changes will occur as a result of the rule and, therefore, where within the 0-50 percent range is a more accurate representation of expected harvest reductions or whether the range itself is appropriate.

Nevertheless, conceptually, if fishermen are restricted from fishing at night, or required to return their gear to port each night, they will incur increased expenses due to the increased amount of fuel required to travel to and from port each day. Other impacts could occur if fishermen are forced to alter the number of nets they set or pull them sooner than they otherwise would. This could produce reduced harvests for each trip, which would reduce profits per trip. Fishermen often try to maximize the amount of fish they catch with each trip by staying out longer, conserving fuel, setting more nets, or leaving nets in the water until they have a sufficient catch. If the restrictions lead to a reduction in harvest, there would be a potential loss of income, and potentially the loss of jobs if less fish are landed commercially, or if the costs increase for each individual fishing trip. If there are less fish landed, this would also impact the fishing dependent businesses, and the communities in the areas where fish are landed. Total ex-vessel revenue losses associated with the rule are estimated at \$1.009 million. This represents 5.32 percent of oceanic gillnet harvests and 10.4 percent of ex-vessel revenue, and 1.78 percent of total harvests by these participants and 2.57 percent of ex-vessel value. These reductions range from no impact in some fisheries/areas, to over 10 percent in others (the Delaware-Maryland-New Jersey Summer Northern medium and large mesh gillnet fisheries and the Virginia Winter Mixed large mesh gillnet fishery). More acute potential impacts would be expected for the communities in those areas expected to experience the most severe reductions. Available information on communities was provided in Section 3.3.2.

As previously stated, the analysis for this Plan assumes that fishermen will not shift from one fishery to another, as new regulations are imposed on the fishery they now participate in. However, fishermen may in fact adapt to the new regulations by changing the way in which they fish, or switch to another fishery, if feasible, to continue to make the same amount of income from fishing. New restrictions on the way people fish may force some fishermen to seek other types of employment to supplement their income. Some fishermen may choose to leave the industry altogether for a new profession if it is not economically feasible to change their current fishing practices, or they cannot switch to another fishery. Obviously, changes to the amount of fish harvested, or changes in the number of fishermen involved in a particular fishery, will have impacts on the people in fishing dependent businesses and on the fishing communities. Such movements, however, cannot be predicted at this time. It should be noted, however, that as fishermen continue to be subjected to an increasingly restrictive regulatory environment, they face an increasingly limited set of options for relocation to other fisheries or modification of their fishing behavior.

Similar results are also expected due to the restrictions on various mesh sizes and length of nets, which vary in the different management units. Any regulation that forces fishermen to modify or change their gear will result in fishermen incurring additional costs, further contributing to decreased profits.

Generally, the intent of these Alternatives is to help reduce the bycatch of bottlenose dolphins and sea turtles. Any reduction of harm to these resources will be a positive impact on preserving

these species for their intrinsic value and preservation of marine biodiversity. The impacts of such benefits on fishing communities, however, cannot be quantified.

7.0 FINAL REGULATORY FLEXIBILITY ACT ANALYSIS

7.1 INTRODUCTION

The purpose of the Final Regulatory Flexibility Act (FRFA) is to establish a principle of regulatory issuance that agencies shall endeavor, consistent with the objectives of the rule and of applicable statutes, to fit regulatory and informational requirements to the scale of businesses, organizations, and governmental jurisdictions subject to regulation. To achieve this principle, agencies are required to solicit and consider flexible regulatory proposals and to explain the rationale for their actions to assure that such proposals are given serious consideration. The FRFA does not contain any decision criteria; instead, the purpose of the FRFA is to inform the agency, as well as the public, of the expected economic impacts of various regulatory alternatives and to ensure that the agency considers alternatives that minimize the expected impacts while meeting the goals and objectives of the action and applicable statutes.

With certain exceptions, the RFA requires agencies to conduct a final regulatory flexibility analysis for each rule. The regulatory flexibility analysis is designed to assess the impacts various regulatory alternatives will have on small entities, including small businesses, and to determine ways to minimize those impacts. This analysis is conducted to primarily determine whether the action alternatives will have a "significant economic impact on a substantial number of small entities." In addition to analyses conducted for the Regulatory Impact Review (RIR), the regulatory flexibility analysis provides: (1) a description of the reasons why action by the agency is being considered; (2) a succinct statement of the objectives of, and legal basis for, the rule; (3) a description and, where feasible, an estimate of the number of small entities to which the rule will apply; (4) a description of the projected reporting, record-keeping, and other compliance requirements of the rule, including an estimate of the classes of small entities which will be subject to the requirements and the type of professional skills necessary for preparation of the report or record; (5) an identification, to the extent practicable, of all relevant federal rules which duplicate, overlap, or conflict with the rule; and (6) a description of significant alternatives to the rule, which accomplish the stated.

7.2 ANALYSIS

Description of the reasons why action by the agency is being considered: The need and purpose of the rule are set forth in Section 1.1 and are incorporated by reference. In summary, this rule is being considered because serious injury and mortality of the western North Atlantic coastal bottlenose dolphin stock incidental to commercial fishing activities is occurring at levels greater than are sustainable.

Statement of the objectives of, and legal basis for, the rule: The specific objective of this rule is to reduce the incidental mortality and serious injury by commercial fishing gear of bottlenose

dolphins and provide consistency amongst state and federal management measures by revising the large mesh size restriction under the mid-Atlantic large mesh gillnet rule. Marine Mammal Protection Act and the Endangered Species Act provide the legal basis for the rule.

Summary of the significant issues raised by the public comments in response to the IRFA, a summary of the assessment of the agency of such issues, and a statement of any changes made in the rule as a result of such comments: Significant issues were raised by the public in response to the expected impacts of the beach seine management measures, rolling closures of the large mesh gillnet fishery in North Carolina and Virginia to protect sea turtles, and gear marking requirements contained in the Proposed Rule. In general, the concerns were that the impact of the beach seine measures did not fully encompass all entities affected, that the exemptions that would minimize the impacts of the large mesh rolling closures did not match, as they were intended, the fishery methods that are actually utilized, and that the gear marking requirements were excessive. While the analysis of the beach seine measures included all entities that could be identified using available data, thereby not understating potential impacts, NMFS determined that the proposed measures may be unwarranted at this time based on new analyses with updated status quo fishing practices indicating that the beach gear operating requirements are not currently necessary to meet PBR under the MMPA. NMFS also intends to conduct additional research to determine if these measures are necessary in the future. These measures are, subsequently, not contained in the Final Rule. With respect to large mesh fishery closures, these were intended to help reduce sea turtle mortality within state waters, compatible with existing regulations in federal waters. Since publication of the Proposed Rule, the appropriate states have implemented or are taking steps to implement their own measures to accomplish the necessary protection for sea turtles. The closures are, therefore, not contained in the Final Rule. In response to the comments on potential impacts of the gear marking requirements, the gear marking requirements of affected states were reanalyzed and determined to be sufficient to meet NMFS needs. All states now maintain their own requirements, with the exception of Georgia, but gillnet fishing is prohibited in Georgia state waters. Therefore, gear marking requirements are not enacted in this final rule.

Description and estimate of the number of small entities to which the rule will apply: A total of 3,079 entities were identified as having recorded landings in the 2001 fishing season using gillnet gear in North Carolina through New Jersey and will be affected by the fishing restrictions contained in the rule. Total harvests from all fisheries that these entities participate in (all gears) are estimated to have an ex-vessel value of \$98 million, or an average of approximately \$32,000 per entity.

Description of the projected reporting, record-keeping and other compliance requirements of the rule, including an estimate of the classes of small entities that will be subject to the requirement and the type of professional skills necessary for the preparation of the report or records: The rule will not impose any additional reporting, record-keeping, or compliance requirements.

Identification of all relevant federal rules which may duplicate, overlap or conflict with the proposed rule: No duplicative, overlapping, or conflicting federal rules were identified.

Substantial Number of Small Entities Criterion: All commercial fishing operations in the respective gillnet fisheries that operate in the manner and location encompassed by the rule will be affected by the rule. The benchmark for a fish-harvesting business to be considered a small entity is if the entity is independently owned and operated, not dominant in its field operation, and has annual receipts not in excess of \$3.5 million. Given the average revenue information provided above, all such operations, where they exist, in the gillnet fisheries are, therefore, assumed to be small entities. Thus, a substantial number of small entities will be affected by the rule.

Significant Economic Impact Criterion: The outcome of "significant economic impact" can be ascertained by examining two issues: disproportionality and profitability.

Disproportionality: Do the regulations place a substantial number of small entities at a significant competitive disadvantage to large entities? All business entities participating in the respective gillnet fisheries are considered small entities, so the issue of disproportionality does not arise.

Profitability: Do the regulations significantly reduce profit for a substantial number of small entities? Information on the profit profile of participants in the respective gillnet fisheries covered by the rule is not available. Inferences on the effects of the rule on profitability of the impacted small entities, however, may be drawn from examination of the expected impacts on ex-vessel revenues. Total costs associated with harvest reductions (lost ex-vessel revenue) across all gillnet fisheries are estimated at \$1.009 million. This represents less than 2 percent of total ex-vessel revenues for the entities involved in all these fisheries. Thus, from this perspective, the rule will not appear to have a significant effect on the gillnet sectors. However, certain sub-sectors or fisheries are expected to be more severely impacted. Impacts on sub-sectors range from no expected impacts on participants in the large mesh gillnet fishery in North Carolina state waters due to the night fishing restrictions, to an estimated 14 percent reduction in ex-vessel revenues for participants (372 fishers) in the Winter Mixed Virginia oceanic large mesh gillnet fishery due to the night fishing restrictions. A second example is an estimated 11 percent reduction in ex-vessel revenues for participants (23) in the Delaware-Maryland-New Jersey Summer Northern oceanic medium and large mesh gillnet fishery due to the fishing proximity and return to shore provisions of the rule. In total, these two sub-sectors encompass approximately 12.82 percent of identified entities that will be affected by the rule.

Given these results, indicating that over 12 percent of identified entities in the gillnet fisheries are estimated to experience up to greater than 10 percent reductions in ex-vessel revenues it is, therefore, concluded that the rule will have a significant impact on a substantial number of small entities.

Description of significant alternatives to the rule and discussion of how the alternatives attempt to minimize economic impacts on small entities: NMFS evaluated seven Alternatives for the Preferred Alternative. Alternative 1 would allow status quo operation of the fisheries, thereby eliminating all adverse economic impacts. This alternative would not, however, achieve the required reduction in the incidental mortality and serious injury by commercial fishing gear on bottlenose dolphin, and, as such, will not meet the objectives of the Action. Alternative 2 would impose additional restrictions on the beach seine fishery, require rolling closures of the large mesh gillnet fishery in North Carolina and Virginia, and require gear marking requirements not included in the Action, thereby resulting in increased adverse economic impacts than the Action. Alternative 6 would add a daily hauling requirement and mandatory bycatch certification training to the measures in the Action. Although it was concluded that the hauling provision is unenforceable and, therefore, would not result in additional resource protection, in theory this requirement would constitute an even more restrictive action, thereby not mitigating the adverse impacts of the Action. This alternative would also impose additional, but unquantifiable, costs on the fishery participants over those imposed by the Action. Alternatives 3-5 were considered that, respectively, prohibit all ocean gillnet fishing within 3 km from shore, limit all ocean gillnet fishing to at most 12 consecutive hours, and prohibit all ocean gillnet fishing in state waters. All of these Alternatives were projected to result in greater direct adverse economic impacts on small entities than the Action. These three Alternatives, as well as Alternative 6, which contains the daily hauling and bycatch certification provisions, would also impose additional gear marking requirements, with increased costs, over those included in the Action. Therefore, of all the alternatives considered that achieve the required reduction in the mortality and serious injury of bottlenose dolphins and sea turtles incidental to commercial fishing gear, the Action best minimizes the potential negative economic impacts.

8.0 OTHER CONSIDERATIONS

In accordance with legal mandates, NMFS must consider the effect of the Preferred Alternative on small businesses, marine mammals, endangered species, essential fish habitat, and the human environment.

8.1 ENDANGERED SPECIES ACT (ESA)

The ESA imposes on all federal agencies a duty to ensure that agency actions do not jeopardize the continued existence of any threatened or endangered species or result in the destruction or adverse modification of the Critical Habitat of such species. To effectuate the ESA's duty to avoid jeopardy and adverse modification, the ESA requires the "action" agency to consult with an "expert" agency to evaluate the effects a proposed agency action may have on a listed species. If the action agency determines through preparation of a biological assessment or informal consultation that the Preferred Alternative is "not likely to adversely affect" listed species or Critical Habitat, formal consultation is not required so long as the expert agency concurs. If new information reveals additional effects to listed species or their Critical Habitat in a manner or to an extent not previously considered, NMFS must initiate consultation under the ESA and an

informal consultation must be completed. An informal Section 7 consultation was completed for this action, which determined the action may affect, beneficially, listed species under NMFS' jurisdiction that may be present in the action area. Therefore, NMFS concluded the action is not likely to adversely affect endangered or threatened species or designated critical habitat under NMFS' jurisdiction.

8.2 MARINE MAMMAL PROTECTION ACT (MMPA)

The Preferred Alternative to expand gear restrictions will not adversely affect marine mammals. Instead, the Preferred Alternative will reduce serious injury and mortality of the Western North Atlantic coastal bottlenose dolphin stock, and potentially other marine mammals, incidental to commercial fishery interactions. The bycatch reduction provided by the Preferred Alternative will help NMFS' accomplish the goals under Section 118 of the MMPA, generally, to reduce mortality and serious injury of marine mammals incidental to commercial fishing operations.

8.3 PAPERWORK REDUCTION ACT (PRA)

The purpose of the PRA is to minimize the paperwork burden for individuals, small businesses, educational and nonprofit institutions, and other persons resulting from the collection of information by or for the federal government. The proposed rule associated with this rulemaking contained collection-of-information requirements subject to the PRA because of proposed gear marking requirements. This requirement was fulfilled and submitted to the Office of Management and Budget (OMB) for approval. However, after analyzing public comments received during the public comment period and reviewing states current gear marking requirements, NMFS is not currently pursuing gear marking requirements under this rulemaking. Therefore, the Preferred Alternative associated with this EA does not contain collection-of-information requirements under the PRA.

8.4 ESSENTIAL FISH HABITAT (EFH)

Pursuant to the Magnuson-Stevens Act, federal agencies must undergo a consultation process regarding any of their actions authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken that may adversely affect EFH. The area affected by the Action was identified as EFH through several FMPs, and through consultation, NMFS determined that the restrictions in the Preferred Alternative will not adversely affect EFH of species managed by the NMFS, Mid-Atlantic Fishery Management Council, or the South Atlantic Fishery Management Council. Further coordination on this matter was not deemed necessary unless future modifications are proposed which may adversely impact EFH.

8.5 ENVIRONMENTAL JUSTICE CONCERNS

Executive Order 12898 requires that federal actions address environmental justice in decision-making process. In particular, the environmental effects of the actions should not have a

disproportionate effect on minority and low-income communities. The Action is not expected to have a disproportionate effect on minority or low-income communities because the need of reducing commercial fishery bycatch of protect resources created the framework for developing the Preferred Alternative. The commercial fisheries affected by the Preferred Alternative are Category I and II fisheries, which are those determined to frequently or occasionally interact with protected resources. Therefore, the Preferred Alternative is based on these Category I and II fisheries and specifically regulates the fisheries and locations in which interactions with protected species from these fisheries are occurring.

8.6 COASTAL ZONE MANAGEMENT ACT

NMFS determined that these regulations are consistent to the maximum extent practicable with the enforceable policies of those coastal states in the Atlantic including New Jersey through Florida that have approved coastal zone management programs. Furthermore, the Preferred Alternative does not alter the manner in which the affected commercial fisheries are prosecuted. Letters were sent to those states for their concurrence.

NMFS received four concurrence responses and two non-concurrence responses from the eight states affected by the BDTRP. The remaining two states did not send responses within the specified 60-day comment period and were considered concurrences. After analyzing comments received during the public comment period, NMFS is not including some aspects of the proposed rule in the final rule. These omissions subsequently addressed concerns raised under CZMA. NMFS, therefore, maintains that these regulations are consistent to the maximum extent practicable with the eight coastal states affected by the BDTRP.

8.7 EXECUTIVE ORDER 12630

Executive Order 12630 requires that federal actions address and ensure with due regard for fiscal accountability, for the financial impact of the obligations imposed on the federal government by the Just Compensation Clause of the Fifth Amendment, and for the Constitution. The Fifth Amendment of the United States Constitution provides that private property shall not be taken for public use without just compensation. NMFS determined that Preferred Alternative is consistent with the Fifth Amendment of the Constitution and will not have any impact on constitutionally protected property rights.

8.8 FEDERALISM

Executive Order 13132 requires that federal actions ensure for the division of governmental responsibilities between the national government and the states that was intended by the Framers of the Constitution, to ensure that the principles of Federalism established by the Framers guide the executive departments and agencies in the formulation and implementation of policies, and to further the policies of the Unfunded Mandates Reform Act. This Executive Order, to the extent practicable and permitted by law, ensures that no agency will promulgate any regulation that has

Federalism implications, that imposes substantial direct compliance costs on state and local governments, and that is not required by statute.

NMFS determined that these final regulations are consistent with Executive Order 13132, Federalism. The majority of these regulations were recommended by a take reduction team, which included wildlife agency representatives from all states affected by this action. In addition, the Assistant Secretary for Legislative and Intergovernmental Affairs provided notice of the Preferred Alternative to appropriate officials in all the affected coastal states during the public comment period. NMFS received one response to these notices in which the concern was addressed in the final rule and a response to the appropriate official.

8.9 INFORMATION QUALITY ACT

Section 515 of Public Law 106-554, 44 U.S.C. § 3516 (Section 515) requires that each federal agency subject to the Paperwork Reduction Act, 44 U.S.C. Chapter 35, issue guidelines for ensuring and maximizing the quality, objectivity, utility, and integrity of the information it disseminates. Section 515 also directs each federal agency to establish an administrative mechanism that allows affected persons to seek and obtain correction of information maintained and disseminated by the agency that does not comply with information quality guidelines issued by the OMB.

NMFS followed the OMB guidelines for maximizing the quality, objectivity, utility, and integrity of the information used in the development of this rule and associated regulations as required by this Act. A pre-dissemination review was completed for the proposed rule by the Protected Resources Division of the Southeast Regional Office on July 1, 2004, and found the rule complies with applicable information quality guidelines implementing the Information Quality Act (Section 515 of Public Law 106-554). Because the final rule did not enact portions of the proposed rule based on public comment and additional information, another pre-dissemination review was completed for the final rule by the Protected Resources Division of the Southeast Regional Office on September 27, 2005, and also found the rule complies with applicable information quality guidelines implementing the Information Quality Act (Section 515 of Public Law 106-554).

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- 2-27-02 q. 2002. NMFS. Option 9. What is the predicted bycatch rate if spiny dogfish in NC and VA were not allowed overnight sets and were not allowed floatline length > 1200, >

- 1500, or >1800 ft? Bottlenose Dolphin Take Reduction Process Document Inventory Number: 2-27-02q. February 2002.
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- 4-1-03 w. BDTRT 2003. Bottlenose Dolphin Take Reduction Team: A Summary of the Sixth Meeting. Summary prepared by Jim Feldt and Hans Neuhauser and submitted to NMFS. Bottlenose Dolphin Take Reduction Process Document Inventory Number: 4-1-03 w. May 1, 2003.
- 16 U.S.C. 1361 et seq. United States. Congress. Marine Mammal Protection Act of 1972 as Amended.
- 16 U.S.C. 1531 et seq. United States. Congress. Endangered Species Act of 1973 as Amended.

10.0 LIST OF PREPARERS

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11.0 LIST OF AGENCIES AND PERSONS CONSULTED

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List of contacts available at the BDTRT web site:

<http://www.nmfs.noaa.gov/pr/interactions/trt/bdtrp.htm>

12.0 APPENDICES

Appendix 1: Year 2000 Bycatch, and Predicted Bycatch Under Different Potential Mitigation Measures Compared to PBR

Seasonal Management Units			Alternatives						
	PBR	Actual Bycatch ¹ in the Year 2000	1: No Action	2: Proposed Rule	3: Prohibit gillnets within 3 km	4: Allow fishing 12 out of 24 hours ²	5: No gillnets in state waters ³	6: BDTRT's Recd.	7: Preferred Alternative
SUMMER									
Northern migratory	73	30	36	29 (or 36)	17 (or 30)	8 (or 12)	4	29 (or 36)	29 (or 36)
Northern North Carolina	20	29	26 ⁴	15 (or 19) ⁴	20 (or 38) ⁴	13 (or 24) ⁴	3 ⁴	15 (or 19) ⁴	15 (or 19) ⁴
Southern North Carolina	9.9	0	0	0	0	0	0	0	0
WINTER									
Mixed Stock	68	151	65 ⁵	57 (or 61) ⁵	28 (or 50) ⁵	21 (or 35) ⁵	5 ⁵	57 (or 61) ⁵	56 (or 62) ⁶
ALL YEAR									
South Carolina	20	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown

Georgia	17	Unknown							
Northern Florida	3.3	0	Unknown						
Central Florida	74	4	Unknown						

This table was based primarily on documents 4-1-03 g and 4-1-03 x (see Appendix 3) and updated based on Palka and Rossman (2004) and (2005). (Shaded cells denote bycatch at PBR, below PBR, or unknown).

¹ 2000 bycatch estimates are actual, the rest of the estimates are predicted. Beach-based (also known as beach seine) estimates are added to the mid-Atlantic gillnet fisheries estimates, where appropriate. Columns with an estimate in parentheses means a range of effort was explored, usually 50% (and 100%) of the effort (landings) as reported in 2001.

² 12 out of 24: fishing was allowed for 12 consecutive hours within a 24-hour time period.

³ No State: fishing prohibited in state waters.

⁴ Mortality estimates includes the average estimated mortality of 3 animals attributed to beach-based gillnets (Palka and Rossman 2004).

⁵ Mortality estimates includes the average estimated mortality of 4 animals attributed to beach-based gillnets (Palka and Rossman 2004).

⁶ Mortality estimates were updated based on Palka and Rossman 2005 and include the average estimated mortality of 4 animals attributed to beach-based gillnets.

Appendix 2: Comments Received During the Public Scoping Period

NMFS provided a diversity of opportunities for the general public to comment on the development of the BDTRP as well as its supporting analyses. The opportunities have included formal public scoping periods, open comment periods at the BDTRT meetings, web links to provide electronic comments, and staff resources dedicated to ensuring a link between affected parties and the agency.

NMFS provided two formal public scoping periods. On July 22, 2002, NMFS published in the *Federal Register* a Notice of Intent (NOI) to Prepare an Environmental Impact Statement (67 FR 47772) for the development of the BDTRP. On September 19, 2002, NMFS published a notice reopening the comment period for an additional 45 days to ensure that the public had ample opportunity to provide comments (67 FR 59051).

The agency received five sets of comments during the public scoping period. The comments were taken into consideration during the development of the proposed rule and its supplementing analyses. One commenter recommended that the BDTRT take into consideration the use of acoustic alarms, otherwise known as pingers, to deter interactions with fishing gear. Another commenter challenged that the agency's bycatch reduction goal lacked common sense, questioned its use of the best available science, recommended the agency review the costs versus benefits of the proposed bycatch measures, questioned a BDTRT member's appropriateness for continued participation on the BDTRT, questioned the agency's evaluation of the bycatch reduction potential of proximity requirements, chastised NMFS' delay to implement cooperative research efforts, requested a definition of ZMRG, questioned the stock delineations' impacts on PBRs for each management unit, requested flexibility for phased-in regulations, and asked for the agency's consideration of human safety and costs to fishermen. Another commenter recommended specific data collection and analysis; acoustic deterrents; time and area closures; modification of fishing gear or practices; releasing dolphins alive; research and development; monitoring and evaluation; and education, training, and outreach. Another commenter suggested a ban on gillnets or heavy restrictions on the use, size, and length of the gear. The agency also received a comment stating that NMFS should ensure that its environmental analysis is sufficiently broad to determine whether existing mandates or the proposed rule will achieve the MMPA's goals, including discussing the uncertainty involved in the decision-making. The commenter also stated that the agency should review and respond to the BDTRT's critique of the science used in the take reduction process.

Take Reduction Team Meeting Public Comment Opportunities

The BDTRT was first convened on November 7, 2001. A *Federal Register* notice announcing the convening of the BDTRT and its first meeting was published on October 24, 2001 (66 FR53782). The BDTRT met a total of five times before delivering consensus recommendations for the BDTRP to NMFS on May 7, 2002, and also met in April 2003 to review updated bottlenose dolphin abundance information and to augment the original recommendations where they did not meet the statutory requirements of the MMPA. The dates of the six meetings were: November 7-8, 2001; January 23-25, 2002; February 27-March 1, 2002; March 27-28, 2002;

April 23-25, 2002; and April 1-3, 2003. BDTRT meetings were open to the public and a public comment period was held following each day of meetings. Additionally, NMFS held three public meetings with potential BDTRT members and other interested members of the public on May 15-16, 2001; July 11-12, 2001; and November 6, 2001.

Staff Resources

NMFS hired a commercial fisheries liaison to engage the commercial fishing sector by sharing information about the purpose of the BDTRT, meeting dates and locations, and the discussion topics for upcoming meetings. The liaison used dockside visits, commercial fishing publications, and a commercial fishing expo to disseminate the information. NMFS generated and distributed a fact sheet about the BDTRT and upcoming meetings, developed a web site regarding the issue, and used mail and electronic mail to distribute information about meeting logistics and summaries to over 200 interested persons. NMFS continues to remain accessible to the public's comments and concerns by broadcasting its staff's contact information through its web site and publications.

Appendix 3: Bottlenose Dolphin Take Reduction Process Document List

Inventory #	Title/Description	Author
11-6-01 a	Summary of Abundance Estimates and PBR for coastal Tursiops for waters between NY and FL during 1995-2000	Palka et al.
2-27-02 b	Reserved (Fig. 7 and 11)	Rossmann
2-27-02c	“Pathology Assessment” of Observed Takes of Bottlenose Dolphins	Cetacean and Sea Turtle Team, NOAA Beaufort Lab
2-27-02 d	Bottlenose Dolphin Age and Length Distributions	Cetacean and Sea Turtle Team, NOAA Beaufort Lab
2-27-02 e	Characterization of Gillnet Gear for Coastal Fisheries in Northern and Southern North Carolina	Cetacean and Sea Turtle Team, NOAA Beaufort Lab
2-27-02 f	Preliminary Report on the Former Net Fisheries for Tursiops truncatus in the Western North Atlantic	Mead
2-27-02 g	General Table of Take Reduction Team Related Time and Costs	NMFS
2-27-02 h and addendum	Summary and table of all options. Addendum Revised Mar. 13, 2002.	Palka
2-27-02 i and addendum	Option 1: Estimate the effects of the current existing spiny dogfish FMP on the coastal bottlenose dolphin bycatch rate and total bycatch estimate, by assuming there had never been any dogfish hauls and that effort simply disappeared.	NMFS
2-27-02 j	Option 2: What was the benefit of the harbor porpoise (HP) take reduction plan on the coastal bottlenose dolphin bycatch estimates?	NMFS

Inventory #	Title/Description	Author
2-27-02 k and addendum	Option 3: What is the effect on the coastal bottlenose dolphin bycatch rate and total estimate if effort from spiny dogfish were displaced into croaker and bluefish, where 50 percent of effort goes into each of croaker and bluefish?	NMFS
2-27-02 l	Option 4: Evaluate the bycatch rate for hauls in the medium and large mesh fisheries with different soak durations, in intervals of 6 hours intervals.	NMFS
2-27-02 m	Option 5: Evaluate the bycatch rates of hauls close to and far from the beach, where the dividing line between close and far is defined as 1km, 2km, or 3km.	NMFS
2-27-02 n	Option 6: What is the effect on the coastal bottlenose dolphin bycatch rate if kingfish hauls in NC were only allowed to fish with twine size of < 0.70 mm?	NMFS
2-27-02 o	Option 7: What is the effect on the bycatch rate if all hauls with mesh > 7 inches had no overnight sets? If overnight soaks were allowed only if they used tie downs? If this was true for only various distances from the shore?	NMFS
2-27-02 p	Option 8. What is the effect on the bycatch rates if spiny dogfish hauls in NC and VA were not allowed to soak overnight?	NMFS
2-27-02 q	Option 9. What is the predicted bycatch rate if spiny dogfish in NC and VA were not allowed overnight sets and were not allowed floatline length > 1200, > 1500, or >1800 ft?	NMFS
2-27-02 r	Option 10. What is the effect on the bycatch rates if hauls in VA and NC that target striped bass were only allowed to soak for less than 24 hours?	NMFS
2-27-02 s	Option 11. What is the effect on the bycatch rate when hauls off of VA and NC that target striped bass were only allowed to have soak durations of less than 24 hours, and for those hauls off VA they were only allowed float line lengths of 1200 feet or 900 feet?	NMFS

2-27-02 t	Reserved: Relationships between number of strandings and landings	Palka
2-27-02 u	Reserved: Distribution of landings of hauls with and without coastal bottlenose dolphin takes	Palka
2-27-02 v	Disposition of Observed Takes in Beach Seines and Gear Characteristics of Those Hauls (Revised 3-14-02)	Cetacean and Sea Turtle Team, NOAA Beaufort Lab & NEFSC
2-27-02 w	Blue crab pot fishery: Stranding Network Options. A Sub-Group Report. Revised Mar. 1, 2002.	Compiled by Swingle
2-27-02 x	Blue crab pot fishery: Inverted Baitwells	Poppell
2-27-02 y	Crab Pot Interaction Issue: Sinking Line Strategy, Draft Proposal, BDTRT Sub-group. Revised Mar.1, 2002.	Compiled by DeAlteris
2-27-02 z	Crab Pot Interaction Issue: Estuaries, Sounds, and Bays. BDTRT Sub-group	Read
2-27-02 aa	Fishing effort in Maryland since the dogfish fishery elimination	Outten
2-27-02 ab	Georgia Blue Crab Monthly Landings for the License Year 2000-2001 by County of Crabber Residence and Area Landed	Georgia
2-27-02 ac	Observed (NEFSC) Incidental Takes of Sea Turtles in Relation to Coastal Bottlenose Dolphin Incidental Takes Observed in Mid-Atlantic Gillnet Fisheries	NEFSC
2-27-02 ad	A Preliminary Abundance Estimate for the North Carolina Winter Management Unit of <i>Tursiops truncatus</i> from a winter 2002 mid-Atlantic aerial line transect survey	Garrison & Hoggard
2-27-02 ae	Preliminary Estimates of Coastal Bottlenose Dolphin Abundance: North Carolina Winter Management Unit (overheads)	Garrison & Hoggard

2-27-02 af	Memo: Consideration of Mortality of Dolphin Males in Achieving the Objectives of the Take Reduction Process	Ragen
2-27-02 ag	Location, In Net, of Bottlenose Dolphins & Turtle Takes Associated with Dolphin Takes	NEFSC
2-27-02 ah	Education/Information for Crabbers (recreational and commercial) (Revised Mar.1, 2002)	Ludford
2-27-02 ai	Blue Crab Fishery. Derelict Pot Removal Sub-group. (Revised Mar.1, 2002).	Halgren
2-27-02 aj	Recreational Fishermen and Marine Mammal/Sea Turtle Protection	NMFS
2-27-02 ak	Memo: Sean McKenna to Katie Moore. Re: State Comparisons of the Blue Crab Effort Management Actions for the Commercial Pot Fishery.	McKenna
2-27-02 al	Winter Mixed Stock Management Unit Workgroup Mar. 1, 2002 (Revised Mar.1, 2002)	BDTRT Workgroup
2-27-02 am	Recommendations for N. Migratory Management unit in summer (May thru October). Mar.1, 2002	BDTRT Workgroup
2-27-02 an	South Carolina, Georgia, Florida Management Units Mar. 1 2002	BDTRT Workgroup
3-27-02 a	Meeting Summary- Meeting 3	Facilitators
3-27-02 b	How many observed trips that targeted kingfish or gray sea trout left their nets out overnight, and what percent of these were in the small mesh fishery?	Palka
3-27-02 c	Option 12: Evaluate the bycatch rate for hauls that have different net heights and for hauls that occupy different amounts of the water column.	Palka
3-27-02 d	Question: How many observed trips targeted striped bass?	Palka

3-27-02 e	Biopsy Sampling of Bottlenose Dolphins off North Carolina during the winter of 2001/2002	Baird et al. Southeast Fisheries Science Center
3-27-02 f	Comparison of bottlenose dolphin strandings and fishing effort for spiny dogfish and bluefish in NC from 1997-2000.	Hohn et al. Cetacean and Sea Turtle Team, NOAA Beaufort Lab
3-27-02 g	Assessment of Opportunistically Observed Takes in and FI Strandings Concurrent with the Roe Mullet Stop Net Fishery along Bogue Banks, NC 1993-2001	Cetacean and Sea Turtle Team, NOAA Beaufort Lab
3-27-02 h	Commercial Fishing Supplies	Keller
3-27-02 i	Preliminary Bottlenose Dolphin Take Reduction Team Recommendations: Some Gear-Related Questions. March 19, 2002. Revised March 26, 2002.	NMFS Southeast Regional Office
3-27-02 j	The Fish Net Company	Fish Net Co.
3-27-02 k	CIE Review Report from Dr. Murdoch McAllister	McAllister
3-27-02 l	CIE Review Report from Dr. Michael C.S. Kingsley	Kingsley
3-27-02 m	CIE Review Report from Dr. A. Rus Hoelzel	Hoelzel
3-27-02 n	A preliminary estimate of perception bias in the Winter 2002 mid-Atlantic aerial survey.	Garrison
3-27-02 o	Update on Winter Abundance Estimate for Bottlenose Dolphins, <i>Tursiops truncatus</i> , Along the Atlantic Coast of the U.S.	Garrison
3-27-02 p	Investigating effects of aspects of the proposed regulations for the WINTER MIXED STOCK MANAGEMENT UNIT using the observer data	Palka

3-27-02 q	Investigating effects of aspects of the proposed regulations for the SUMMER MIGRATORY STOCK MANAGEMENT UNIT using the observer data	Palka
3-27-02 r	Sea Turtle Bycatch Monitoring of the 2000 Fall Flounder Gillnet Fishery of Southeastern Pamlico Sound, North Carolina. NCDMF Completion Report for Incidental Take Permit 1259.	Gearhart
3-27-02 s	As Assessment of Sea Turtle Entanglement in 6-inch monofilament gill net. June 2000. Panama City, Florida.	SEFSC, NMFS Pascagoula Lab
3-27-02 t	Characterising an Interaction Between Coastal Bottlenose Dolphins (<i>Tursiops truncatus</i>) and the spot gillnet fishery in southeastern North Carolina, USA	Friedlaender, et al.
3-27-02 u	Sea Turtle Conservation; Restrictions to Fishing Activities, Interim final rule; request for comments. FR 67 13098.	NMFS
3-27-02 v	Sea Turtle Conservation; Restrictions to Fishing Activities, Interim final rule; request for comments. FR 66 50350.	NMFS
3-27-02 w	Sea Turtle Conservation; Restrictions to Fishing Activities. Temporary rule; request for comments. FR 66 33489.	NMFS
3-27-02 x	Draft Potential Regulatory Text for the Bottlenose Dolphin Take Reduction Plan Implementing Regulations	NMFS
3-27-02 y	NC Winter Mixed & Summer Northern Migratory Management Units, March 27, 2002.	Subgroup Report
4-23-02 a	Meeting Summary- Meeting 4	Facilitators
4-23-02 b	Number of strandings of bottlenose dolphins 117 cm on ocean beaches in North Carolina by county during 2001.	Cetacean and Sea Turtle Team, NOAA/NMFS
4-23-02 c	Sea Turtle Incidental Takes in Gillnet Fisheries (1995-2000)	NEFSC

4-23-02 d	NC Portion of the Mixed Stock Management Unit	NEFSC
4-23-02-aa	Group that revisited the SC, GA, and FL Management Units and Blue Crabs	SC, GA, FL, Blue Crab Break-out Group
4-23-02-ab	Blue Crab Pot Fishery Non-Regulatory Recommendations	Blue Crab Break-out Group
4-23-02-ac	NC Winter Mixed and Summer Northern Migratory Management Units Table	NMFS
4-23-02-ad	Summer Northern Migratory Management Unit, and Revision #1	Summer Northern Migratory Break-out Group
4-23-02-ae	Education and Outreach	Education and Outreach Break-out Group
4-23-02-af	Common elements (Other than Research, etc. and Education/Outreach)	Break-out Group
4-23-02-ag	Research and Monitoring	Research and Monitoring Break-out Group
4-23-02 ah	Consensus Recommendations for a Western North Atlantic Coastal Bottlenose Dolphin Take Reduction Plan. From the Bottlenose Dolphin Take Reduction Team. May 7, 2002	Facilitators
4-1-03 a	Sea Turtle Conservation, Restrictions to Fishing Activities, Greater than 4 1/4 inch mesh gillnet in Pamlico Sound, (67 FR 56931), September 6, 2002	NMFS
4-1-03 b	Sea Turtle Conservation, Restrictions to Fishing Activities, Greater than 8 inch mesh gillnet in the EEZ, (67 FR 71895), December 3, 2002	NMFS
4-1-03 c	Interstate Fishery Management Plan for Spiny Dogfish, Fishery Management Report No. 40 of the ASMFC, November 2002	ASMFC
4-1-03 d	Fine-scaled behaviour of bottlenose dolphins around gillnets	Read et al.

4-1-03 e	Opportunistically Observed and Reported Takes of Bottlenose Dolphins in the Striped Bass Haul/Beach-seine Fishery in North Carolina, December 3, 2002	Cetacean and Sea Turtle Team, NOAA/NMFS
4-1-03 f	Bottlenose Dolphin Strandings in Northern and Southern Counties of North Carolina, November 1997 – 15 March 2003	Cetacean and Sea Turtle Team, NOAA/NMFS
4-1-03 g	Effects of Alternative Mitigation Measures on Mortality of Coastal Bottlenose Dolphins in Gillnet Fisheries, March 11, 2003	Palka and Rossman
4-1-03 h	Abundance of the coastal morphotype of bottlenose dolphin, <i>Tursiops truncatus</i> , in U.S. continental shelf waters between New Jersey and Florida during winter and summer 2002	Garrison et al.
4-1-03 i	Memorandum to the NCMFC Finfish Committee, Preston Pate, and Jess Hawkins on March 7, 2003 regarding the Spiny Dogfish-2003/04 Quota Update	Munden
4-1-03 j	Review of Garrison et al (2003) Abundance of Mid-Atlantic Coastal Morphotype Bottlenose Dolphin During Winter and Summer 2002. 1 March 2003	Pichler
4-1-03 k	Review of the Report: “Abundance of the coastal morphotype of bottlenose dolphin, <i>Tursiops truncatus</i> , in U.S. continental shelf waters between New Jersey and Florida during winter and summer 2002”.	Haddon
4-1-03 l	Review of Abundance of Mid-Atlantic Coastal Morphotype of Bottlenose Dolphin During Winter and Summer 2002	Bowen
4-1-03 m	SEFSC Response to Center for Independent Experts Review of “Abundance of the coastal morphotype of bottlenose dolphin, <i>Tursiops truncatus</i> , in U.S. continental shelf waters between New Jersey and Florida during winter and summer 2002.”	Garrison et al.

4-1-03 n	The Directed Shark Gillnet Fishery: Non-Right Whale Season, 2002 (Catch, Bycatch and Estimates of Sample Size)	Carlson and Baremore
4-1-03 o	The Directed Shark Gillnet Fishery: Right Whale Season, 2002.	Carlson and Baremore
4-1-03 p	Summary of the PBR and Bycatch for the Coastal Bottlenose Dolphin	Palka
4-1-03 q	Refining the 2002 Take Reduction Plan	NMFS
4-1-03 r	ASMFC Presentation on Fishery Management Actions	ASMFC
4-1-03 s	Memo: As Prepared by Michael J. Greco (DE Fish & Wildlife) for the BDTRT Meeting, as April 1-3, 2003: State Landings and Estimated effort for the Spiny Dogfish and Striped Bass fishery from 98-02	Greco
4-1-03 t	The "Cut to the Chase" Summary for the BDTRT April 3, 2003 Meeting	Facilitators
4-1-03 u	TRP Flexibility	Drafted by Ragen, on behalf of TRP subgroup
4-1-03 v	Taking of Marine Mammals Incidental to Fishing Operations, 16 U.S.C. 1387, Section 118: MMPA Reauthorization Proposal	NMFS
4-1-03 w	Bottlenose Dolphin Take Reduction Team: A Summary of the Sixth Meeting	Facilitators
4-1--03 x	Summary of predicted bycatch estimates for alternatives suggested on 01Apr03 for the summer Northern NC management unit	Palka
1-13-05a	Fine-scale Behavior of Bottlenose Dolphins Around Gillnets	Read, Waples, Urian, and Swanner
1-13-05b	Interactions between bottlenose dolphins and the Spanish Mackerel gillnet fishery in North Carolina: Final Report (June 14, 2003)	Read, Swanner, Waples, Urian, and Williams 2002

1-13-05c	Effects of alternative mitigation measures on mortality of coastal bottlenose dolphins in gillnet fisheries	Palka and Rossman 2004
1-13-05d	Updated AA to support draft EA	Palka and Rossman 2004
1-13-05e	Bottlenose dolphin recovered inshore and on ocean-side of beaches of North Carolina from November 2002 through 21 December 2004	Byrd, Lovewell, Hohn 2004
1-13-05f	Mortality summary document 2004	Palka and Rossman 2004
1-13-05g	Target strength of a nylon monofilament and an acoustically enhanced gillnet: predictions of biosonar detection ranges	Mooney et al. 2004
1-13-05h	Information on takes of coastal bottlenose dolphins in gillnets observed by the NE Fishery Observer Program (updated from document 1-23-02g that was revised on 2-14-02)	Rossman 2004
1-13-05i	Highlights of the blue crab fishery and bottlenose dolphin interactions in South Carolina (Master's Thesis)	Burdett 2003
1-13-05j	Pound net Tursiops entanglement log 2004	Tork
1-13-05k	Abundance and stock identity of bottlenose dolphins along the outer banks of North Carolina	Urian et al. (In review)
1-13-05l	BDTRT summary of meeting 7 (January 13-14, 2005 in VA Beach, VA)	facilitators

Appendix 4: Gear marking estimates for identification tags in the mid-Atlantic gillnet fisheries.

Fishery	Gear Length	Number of Participants	Number of Tags	Number of nets	Tag Costs (\$1.10/tag)	Time Costs (10-20 min/net)	Labor Cost (\$10/hr.)	Total Gear Marking Costs	Total Labor Costs	Total
<i>NC Long Haul Seine</i>	3600-4700	33	12-16	10	\$13.2-17.6	2-5.3	\$20-53	\$4,356-\$5,808	\$6,600-\$17,490	\$10,956-\$23,298
<i>Mid-Atlantic Haul Seine</i>	1600-3000	25	2-10	5	\$2.2-11	.33-3.5 hrs	\$5-35	\$275-\$1,375	\$3,125-\$21,875	\$3,400-\$23,250
<i>NC Roe Mullet</i>	1200	13	4	2	\$4.40	.66-2 hrs	\$7-20	\$114.40	\$56-\$160	\$170.4-\$274.4
<i>SE US Atlantic Shark</i>	1200-7500	12	4-25	2	\$4.4-\$27.5	.66-8.3 hrs	\$7-83	\$105.6-\$660	\$168-\$1,992	\$273.6-\$2,652
<i>SE Atlantic Gillnet</i>	1500-1800	133	5-6	20	\$5.5-6.6	.83-5 hrs	\$8-50	\$14,630-\$17,556	\$21,280-\$133,000	\$35,910-\$150,556
<i>NC Inshore</i>	300-3000	94	0-10	30	\$0-11	0-3.3 hrs	\$0-33	\$0-\$31,020	\$0-\$93,060	\$0-\$124,080
<i>Mid-Atlantic Coastal</i>	300-6000	655	0-20	25	\$0-22	0-6.7 hrs	\$0-67	\$0-\$360,250	\$0-\$1,097,125	\$0-\$1,457,375
Total	<i>This table is based on the List of Fisheries. The number of participants, amount of gear, cost of tags, and labor costs may be less or more than is calculated and determined by this table.</i>								\$0 - \$1,364,702	\$0 - \$1,781,485

Appendix 5: Non-Regulatory requirements (implementation and monitoring) for the BDTRP and associated, estimated costs.

Table 1: Gear Research - Implementation

Research Activity	Estimated Costs
Twine Stiffness	\$8,000
Inverted Bait Wells in Crap Pots	\$10,000
String Design/Net Profile	\$10,000
Acoustic Reflective Webbing	\$75,000
Dolphin Behavior Around Nets	\$57,000
Bridle Alterations and Research	\$75,000
Stop Net Research	\$45,000
Plus 40% for continuing development of future ideas	\$112,000
SUBTOTAL	\$392,000
SUBTOTAL (annual costs if assumed research completed in three years)	\$130,600

Table 2: Public Education - Implementation

Outreach Method	Estimated Costs
Voluntary Workshops (years one and three)	\$13,000
Dockside Visits/Fisherman Fora (years one and three)	\$21,000
Web-based Training (one-time cost)	\$2,000
Mail-outs (annually)	\$76,000
SUBTOTAL	\$112,000

Table 3: Stranding Program - Implementation

Activity	Estimated Costs (annually)
Responders' Training/Resources	\$27,000
Geographic Coverage	\$40,650
Communication	\$5,000
Education Enforcement Agents	\$13,000
SUBTOTAL	\$85,650

Table 4: Observer Program - Monitoring

Activity	Estimated Costs (annually)
Sampling fishing with 30% precision	\$1,500,000
Analysis:	
2 Analysts (NEFSC) @ 60% * 30% overhead	\$143,650
1 Program Lead (NEFSC) @ 50% * 30% overhead	\$53,300
1 Analyst (SEFSC) @ 25% * 30% overhead	\$22,750
Field Coordinator	\$200,000
SUBTOTAL	\$1,919,700

Table 5: Take reduction team follow-up action (s) - Monitoring

Staff (with 30% overhead added to all salaries)	Estimated Costs per Meeting
meeting room, facilitators, and travel expenditures for NOAA participants (25 @ \$500)	\$52,500
2 Team Leaders (SERO, SEFSC) @ 10%	\$21,320
5 Biologists (SERO @ 50%, SEFSC @ 10%, HQ @ 5%, NERO @ 5%)	\$81,120
Economist (SERO) @ 5%	\$5,330
3 Analysts (SEFSC, NEFSC) @ 15%	\$40,950
Outreach Agent (HQ) @ 50%	\$31,200
Contractor (SERO) @ 75%	\$39,000
SUBTOTAL	\$271,420

Table 6: Total estimated costs for implementation and monitoring of BDTRP for year one

Non-Regulatory Requirements	Total Estimated Costs
BDTRP Implementation:	
Gear Research (based on per year cost)	\$130,600
Public Education	\$112,000
Stranding Program	\$85,650
BDTRP Monitoring:	
Observer Program	\$1,919,700
BDTRP Staff (assume double costs for two meetings in 2 years after implementation)	\$437,840
BDTRP follow-up meetings (two meetings in 2 years after implementation)	\$105,000
TOTAL	\$2,790,790

Appendix 6: Affected States Current Gear Marking Requirements

STATE	FISHERY	BUOY/FLOAT/LINES	FLAG	COLOR	ID
FL	Shark Drift Gillnet	All buoy lines: 2 ft. from the top & midway, each panel marked on float & leadline every 100 yds. 4" long	N/A	See ALWTRT Regs.	N/A
GA	N/A	N/A	N/A	N/A	N/A
SC	All Gillnets	At least one end Buoy	N/A	Orange	Name and State License Number
NC	All commercial Gillnets	End buoys required, solid form material, 5" diameter, Additional float required to be used as an ID	N/A	Yellow	Engraved in buoy or plastic/metal tag. Name and either reg. number or vessel num
VA	Drift and Anchored Gillnets	Flag on one end, other end flag or buoy if buoy: 50" circumference	12" x 12" at least 3 ft. high, 2" x 2" reflective material	Not specified, but identical in color	Inscribed with comm registration number
DE	All Gillnets and crab pots	Gillnets: Two end Buoys, either a float or flag. Buoy at least 8" in diameter Crab pots: colored buoy with name and address	Gillnets: 12" x 12" at least 3 ft. high, 24" of reflective material attached to each flag or buoy.	Gillnets: Red or Orange	Gillnets: White float between the ends at least 20ft. From end. Permit number, 2" in size.
MD	Gillnets and crab pots	permit number marked on buoys	N/A	N/A	Permit number
NJ	Drift and Anchored Gillnets	Two end buoys, either float or flag. Buoy at least 12" in diameter.	12" x 12" at least 3 ft. high	Orange	White float between the ends at least 20ft. From end. Gear Id number of owner