FINAL

ENVIRONMENTAL ASSESSMENT

FINAL REGULATORY IMPACT REVIEW

AND

FINAL REGULATORY FLEXIBILITY ACT ANALYSIS

FOR A

FINAL RULE

TO TEMPORARILY SUSPEND CIRCLE HOOK REQUIREMENTS FOR ANGLERS PARTICIPATING IN ATLANTIC BILLFISH TOURNAMENTS

April 2007

United States Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Office of Sustainable Fisheries
Highly Migratory Species (HMS) Management Division
1315 East-West Highway
Silver Spring, Maryland 20910

Final Rule to Temporarily Suspend Circle Hook Requirements for Anglers Participating in Atlantic Billfish Tournaments

Framework Adjustment to the Consolidated Atlantic Highly Migratory Species Fishery Management Plan

Actions: The proposed action is to implement a rule that would temporarily suspend regulations finalized in the 2006 Final Consolidated Highly Migratory Species Fishery Management Plan (Consolidated HMS FMP) (October 2, 2006; 71 FR 58058) that limit all anglers fishing from Highly Migratory Species (HMS) permitted vessels and participating in Atlantic billfish tournaments to deploying only non-offset circle hooks when using natural baits or natural bait/artificial lure combinations. The purpose of this rule is to increase post-release survival of Atlantic billfishes by improving long-term compliance with circle hook regulations. To accomplish this, the rule would provide additional time for recreational billfish tournament anglers to become more familiar and proficient with circle hooks and increase awareness among tournament anglers of circle hook conservation benefits.

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

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Abstract: The Consolidated HMS FMP issued on October 2, 2006 (71 FR 58057) required non-offset circle hook use by anglers fishing from HMS permitted vessels in Atlantic billfish tournaments when deploying natural bait or natural/artificial lure combinations to reduce post-release hooking mortality of Atlantic blue marlin, white marlin, sailfish, and spearfish. The Agency has continued to receive comment expressing concerns over the ability of tournament participants to catch large Atlantic blue marlin using circle hooks and requesting delays in implementation, as well as others comments. The purpose of this rule is to increase post-release survival of Atlantic billfishes by improving long-term compliance with circle hook regulations. To accomplish this, the rule would provide additional time for recreational billfish

tournament anglers to become more familiar and proficient with circle hooks and increase awareness among tournament anglers of circle hook conservation benefits. The action would suspend existing regulations that require circle hook use in Atlantic billfish tournaments through December 31, 2007, and reinstate the regulations unchanged at 12:01 a.m. January 1, 2008. Impacts resulting from these actions are not expected to be significant.

FINDING OF NO SIGNIFICANT ENVIRONMENTAL IMPACT FOR A FINAL RULE TO TEMPORARILY SUSPEND CIRCLE HOOK REQUIREMENTS FOR ANGLERS PARTICIPATING IN ATLANTIC BILLFISH TOURNAMENTS

National Marine Fisheries Service
April 2007

The HMS Management Division of the Office of Sustainable Fisheries submits the attached Environmental Assessment (EA) for Secretarial review under the procedures of the Magnuson-Stevens Fishery Conservation and Management Act. This EA was developed as an integrated document that includes a Regulatory Impact Review (RIR) and a Final Regulatory Flexibility Analysis (FRFA). Copies of the rule, EA and RIR are available from NMFS at the following address:

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This proposed action would:

- Temporarily suspend existing regulations that require Atlantic billfish tournament participants who are fishing from HMS permitted vessels and deploying natural bait or natural bait/artificial lure combinations to use non-offset circle hooks through December 31, 2007.

This EA considers information contained in the Final Environmental Impact Statement (FEIS) associated with the Consolidated HMS FMP. All of the information used is herein incorporated by reference.

National Oceanic and Atmospheric Administration Administrative Order 216-6 (NAO 216-6) (May 20, 1999) contains criteria for determining the significance of the impacts of a proposed action. In addition, the Council on Environmental Quality (CEQ) regulations at 40 C.F.R. 1508.27 indicate 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 proposed action is analyzed based on the NAO 216-6 criteria and CEQs "context" and "intensity" criteria.

These include:

1. Can the action reasonably be expected to jeopardize the sustainability of any target species that may be affected by the action?

No. Target species of Atlantic billfish tournament fisheries affected by this proposed action include Atlantic blue marlin, white marlin, sailfish, and longbill spearfish. This proposed action would not jeopardize the sustainability of target species. The October 2006 Report of the Standing Committee on Research and Statistics (SCRS) indicates that blue marlin and white marlin are overfished; however, recent abundance trends (2001-2004) appear to be slightly upward for white marlin and possibly stabilizing for blue marlin. The SCRS reported that estimates of fishing mortality in 2004 were less than that needed for replacement of white marlin stocks and possibly less than that needed for replacement of blue marlin stocks. The SCRS also reported that blue and white marlin stocks have the potential to rebuild under the current ICCAT management plan, but this potential needs verification with an additional 4-5 years of data collection. The status of Atlantic sailfish and longbill spearfish stocks is unclear according to the most recent stock assessment conducted in 2001. No new assessment has been conducted since that time. This proposed action to temporarily suspend the circle hook requirement in Atlantic billfish tournaments would allow anglers in tournaments to continue using fishing methodologies that were used from 2001-2004 during which the SCRS reported slightly upward and possibly stabilizing abundance trends for white marlin and blue marlin respectively.

However, stock assessment results indicating that white marlin and blue marlin are overfished with overfishing occurring show that the Consolidated HMS FMP objective to reduce post-release hooking mortality through strategies such as circle hook use in tournaments remains valid and necessary in the long-term. This proposed action supports this strategy by re-implementing the circle hook requirement following the temporary suspension.

2. Can the action reasonably be expected to jeopardize the sustainability of any non-target species?

No. The proposed action is expected to have a minimal effect on the sustainability of any non-target species. Temporarily suspending the circle hook requirement would be a return to the tournament fishing methods that existed prior to January 1, 2007. The gear (hooks and artificial lures) used in this fishery prior to January 1, 2007, is the same or very similar to gear that continues to be used in fisheries for non-target species. Such gear, as allowed by the temporary suspension of the circle hook requirement, is factored into fishery dependent and independent data collection programs and associated stock assessments for species not targeted by this proposed action and has not been identified as jeopardizing the sustainability of such species.

3. Can the action reasonably be expected to cause substantial damage to the ocean and coastal habitats and/or essential fish habitat (EFH) as defined under the Magnuson-Stevens Act and identified in FMPs?

No. The alternatives considered for billfish management affect allowable terminal tackle. The allowable gear for billfish is rod and reel which is not considered to have a negative impact on oceans, coastal habitats, and/or EFH. The management measures deal with suspension of a

hook(s) in the water column or trolling a hook(s) at the water's surface and as such pose no threat or impact on oceans, coastal habitats, and/or the EFH of HMS or other species.

4. Can the action be reasonably expected to have a substantial adverse impact on public health or safety?

No. The proposed action would have no impact on public health and safety because it affects allowable terminal tackle used in sportfishing. The proposed action would not affect other fishing means and methods aside from the date at which restrictions apply to the use of certain terminal tackle.

5. Can the action be expected to adversely affect endangered or threatened species, marine mammals, or critical habitat of these species?

No. This proposed action would not be expected to adversely affect endangered or threatened species, marine mammals, or critical habitat of these species. White marlin underwent a status review under the Endangered Species Act in 2002 with a determination that listing was not warranted (67 FR 57204; September 9, 2002). As a result of subsequent litigation and a settlement agreement, another status review was initiated following the 2006 stock assessment by the International Commission for the Conservation of Atlantic Tunas (ICCAT). This second 12-month determination is scheduled to be published in December 2007. White marlin is not currently listed as endangered or threatened. There is little or no information or evidence of interactions between recreational anglers targeting billfish and threatened or endangered sea turtles, marine mammals, or sawfish. As such, NMFS does not anticipate that this proposed action would adversely affect these species.

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

No. While the proposed action would temporarily suspend benefits of reduced post-release mortality of blue marlin, white marlin, sailfish, and spearfish with the long-term goal of improved compliance with the regulation, the impact on biodiversity and ecosystem function is anticipated to be minimal. This is because the October 2006 SCRS report shows that recent abundance trends (2001-2004) appear to be slightly upward and possibly stabilizing for white marlin and blue marlin respectively. The trends occurred when domestic Atlantic billfish tournament anglers were using J-hooks, prior to implementation of the circle hook requirements.

7. Are significant social or economic impacts interrelated with natural or physical environmental effects?

No. There are no significant natural or physical environmental effects. Thus, there are no significant social or economic impacts interrelated with significant natural or physical environmental effects.

8. Are the effects on the quality of the human environment likely to be highly controversial?

The effects on the quality of the human environment are not expected to be highly controversial because this proposed action would allow Atlantic billfish tournament anglers to utilize tournament fishing methods that existed prior to the implementation of the circle hook requirement on January 1, 2007, and continue to voluntarily utilize circle hooks. The expectation that this proposed action will not be highly controversial is supported by comments from tournament directors who desired additional time for Atlantic billfish tournament anglers to become more familiar and proficient with circle hooks and increase awareness among tournament anglers of circle hook conservation benefits; therefore, the temporary suspension of the existing rule addresses their concern. The expectation that this proposed action will not be highly controversial is also supported by comments from other tournament directors that expressed that they have been using circle hooks in their tournaments for years because of the conservation benefit and had positive results in tournament participation and fishing success. The concerns of these tournament directors are also addressed by the fact that this proposed action would re-implement the circle hook requirement in Atlantic billfish tournaments on January 1, 2008, and such tournaments may continue to use circle hooks on a voluntary basis as was done prior to the current regulation's effective date of January 1, 2007.

9. Can the 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 or ecologically critical areas?

No. This proposed action does not apply, directly or indirectly, to any of the unique areas listed because no unique areas are present in the affected area of oceanic offshore waters. Additionally, the National Register Information System of the National Register of Historic Places was consulted to determine that historic or cultural resources are not present in the affected area of oceanic offshore waters.

10. Are the effects on the human environment likely to be highly uncertain or involve unique or unknown risks?

The proposed action is not likely to be highly uncertain or involve unique or unknown risks because the Atlantic billfish tournament fishery affected by this proposed action and the fishery's effects are well known and has been monitored for years. The proposed action to temporarily suspend the circle hook requirement for Atlantic billfish tournaments would allow Atlantic billfish tournament anglers to utilize tournament fishing methods that existed prior to January 1, 2007, and continue to voluntarily utilize circle hooks. Angler activity and fish landings should return to patterns similar to those prior to implementation of the circle hook requirement on January 1, 2007.

11. Is the action related to other actions with individually insignificant, but cumulatively significant impacts?

The proposed action would provide temporary relief of terminal tackle requirements for Atlantic billfish tournament anglers. It does not affect non-tournament anglers except to the extent that anglers may choose to practice fishing outside of a tournament in preparation for tournament competition. This impact is expected to be minimal as the temporary suspension of circle hook requirements only affects the use of terminal tackle within Atlantic billfish tournaments. Other Atlantic billfish fishery management measures such as permitting, restriction to using rod and reel only, and size limits have been in place since 1999 and will remain in place. The cumulative impacts of this proposed action in conjunction with other existing management measures are expected to be minimal as evidenced by stable or growing numbers of HMS angling category and charter/headboat permits sold annually for recreational HMS fisheries and the generally increasing numbers of tournament registrations annually. Based on the pace of 2007 tournament registrations, during which the no action alternative has been in place, no decrease in tournament activity has been identified.

12. Is the 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.

The proposed action would not adversely affect any of the locations or resources listed because the proposed action area is the Atlantic Ocean and Gulf of Mexico and none of the aforementioned sites are present in the proposed action area. This was determined by searching the National Register Information System of the National Register of Historic Places. Additionally, the proposed action would not cause the loss or destruction of significant scientific, cultural, or historical resources because the proposed action is intended to promote rebuilding of Atlantic billfish stocks in the long-term which would enhance the aforementioned resources.

13. Can the action reasonably be expected to result in the introduction or spread of a non-indigenous species?

No. The proposed action would temporarily suspend the requirement for HMS permitted vessels to only deploy non-offset circle hooks when fishing in Atlantic billfish tournaments and it would not result in the introduction or spread of any non-indigenous species.

14. Is the action likely to establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration?

No. This proposed action does not obligate the Agency to take similar or related actions in the future or otherwise influence or preclude future decisions. This proposed action would provide additional time for recreational anglers to become more familiar and proficient with the circle hook requirement in Atlantic billfish tournaments and increase awareness among billfish tournament anglers of the benefits of circle hook use with the goal of increasing long-term compliance.

15. Can the action reasonably be expected to threaten a violation of Federal, State, or local law or requirements imposed for the protection of the environment?

No. NMFS has determined that these regulations would be implemented in a manner consistent to the maximum extent practicable with the enforceable policies of those coastal states on the Atlantic including the Gulf of Mexico and Caribbean that have approved coastal zone management programs. Letters were sent to the relevant states asking for their concurrence with the Agency's consistency determination when the proposed rule was filed with the Federal Register. The Agency has not received any notice from any states disagreeing with the Federal consistency determination.

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

No. The proposed action would temporarily suspend regulations requiring circle hook use by HMS permitted vessels in Atlantic billfish tournaments to provide an additional fishing season for recreational anglers to become more familiar with the circle hook requirement in Atlantic billfish tournaments. An additional purpose is to allow additional time for billfish anglers in tournaments to understand and appreciate the benefits of the circle hook rule in achieving the objective of the Consolidated HMS FMP to reduce post-release hooking mortality of Atlantic blue marlin, white marlin, sailfish, and spearfish. Because the SCRS reported that blue and white marlin stocks have the potential to rebuild under the current ICCAT management plan (in existence prior to the January 1, 2007, circle hook rule implementation date), which allows the use of J-hooks, targeted species are not expected to suffer cumulative adverse effects from a temporary resumption of the use of J-hooks. In the long-term, reducing post-release mortality on blue and white marlin stocks should help rebuild these stocks more quickly.

DETERMINATION

In view of the information presented in this document and the analysis contained in the supporting EA prepared for a final rule to temporarily suspend the regulations limiting all HMS permitted vessels participating in Atlantic billfish tournaments to deploying only non-offset circle hooks when using natural baits or natural bait/artificial lure combinations, it is hereby determined that this proposed action will not significantly impact the quality of the human environment as described above and in the supporting EA. 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 proposed action is not necessary.

Approved: _____ _____

Alan D. Risenhoover Date
Office Director, Office of Sustainable Fisheries

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1.0 PURPOSE AND NEED FOR ACTION: RULEMAKING

The purpose of this rule is to increase post-release survival of Atlantic billfishes by improving long-term compliance with recreational billfish tournament circle hook regulations. To accomplish this, the rule would provide additional time for recreational billfish tournament anglers to become more familiar and proficient with circle hooks and increase awareness among tournament anglers of circle hook conservation benefits. This rulemaking is conducted in response to continuing public comment received related to the impacts of requirements to use circle hooks by HMS permitted vessels in Atlantic billfish tournaments. By temporarily suspending existing billfish tournament circle hook regulations and allowing anglers to become more familiar and proficient with circle hooks and their conservation benefits, long-term conservation benefits are anticipated to be realized through improved regulatory compliance.

1.1. Management History

NMFS under the authority of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) and the Atlantic Tunas Convention Act (ATCA) manages the U.S. fishery for Atlantic billfish, including Atlantic blue marlin (*Makaira nigricans*), white marlin (*Tetrapturus albidus*), sailfish (*Istiophorus platypterus*), and longbill spearfish (*Tetrapturus pfluegeri*). Atlantic billfish management strategies have been guided by international and domestic considerations and mechanisms since the 1970s. Domestic management of Atlantic billfish resources has been developed, modified, and implemented in four primary stages and through a series of other rulemakings. In January 1978, NMFS published the Preliminary Fishery Management Plan (PFMP) for Atlantic Billfish and Sharks (43 FR 3818), which was supported by an EIS (42 FR 57716). The PFMP was prepared by the Secretary of Commerce.

Building upon the FMP for Atlantic Billfish and Sharks was the Fishery Management Plan (FMP) for the Atlantic Billfishes (53 FR 21501; June 8, 1988). This plan was jointly developed by five Atlantic regional councils (Caribbean, Gulf, South Atlantic, Mid-Atlantic, New England) and implemented in October 1988 (53 FR 37765; September 28, 1988). The 1988 FMP defined the Atlantic billfish management unit to include sailfish from the western Atlantic Ocean, white marlin, and blue marlin from the North Atlantic Ocean, and longbill spearfish from the entire Atlantic Ocean; described objectives for the Atlantic billfish fishery; and established management measures to achieve those objectives. In response to Magnuson-Stevens Act requirements and concurrent with efforts to develop the 1999 FMP for Atlantic Tunas, Swordfish, and Sharks, NMFS prepared Amendment One to the Atlantic Billfish Fishery Management Plan and published final regulations on May 28, 1999 (64 FR 29090). Amendment One maintained the objectives of the original 1988 Billfish FMP and identified the following additional objectives.

On October 2, 2006 (71 FR 58057), NMFS issued the final rule implementing the Final Consolidated Highly Migratory Species Fishery Management Plan (Consolidated HMS FMP) (NMFS 2006). That document amended and consolidated the objectives and management measures of the Atlantic Billfish FMP with those of the 1999 Atlantic Tunas, Swordfish, and Sharks FMP. It also required the use of non-offset circle hooks by anglers fishing from HMS

permitted vessels and participating in Atlantic billfish tournaments when deploying natural baits and natural bait/artificial lure combinations.

The Consolidated HMS FMP required non-offset circle hook use by anglers fishing from HMS permitted vessels in Atlantic billfish tournaments when using natural bait or natural/artificial lure combinations to reduce post-release hooking mortality of Atlantic blue marlin, white marlin, sailfish, and spearfish. This management measure was taken for stock rebuilding purposes as Atlantic blue and white marlin have been identified as overfished with overfishing occurring. The status of blue and white marlin is characterized by reduced or severely reduced biomass levels and high fishing mortality rates.

In 2002, NMFS conducted an Endangered Species Act (ESA) status listing review for Atlantic white marlin and determined that a listing was not warranted at that time. As a result of subsequent litigation and a settlement agreement, NMFS agreed to initiate a status review following the 2006 stock assessment by the International Commission for the Conservation of Atlantic Tunas (ICCAT). The new status review for Atlantic white marlin has been initiated pursuant to the terms of the aforementioned settlement agreement.

The October 2006 Report of the Standing Committee on Research and Statistics (SCRS) indicates that blue marlin and white marlin are overfished; however, recent abundance trends (2001-2004) are slightly upward and possibly stabilizing for white marlin and blue marlin respectively. While noting uncertainties contained in the 2006 stock assessments, the SCRS reported that estimates of fishing mortality in 2004 were less than and possibly less than that needed for replacement of white marlin and blue marlin stocks respectively. The SCRS also reported that blue and white marlin stocks have the potential to rebuild under the current ICCAT management plan, but this potential needs verification with an additional 4-5 years of data collection.

NMFS received public comment on the tournament circle hook provisions contained in the FEIS for the Consolidated HMS FMP. Commenters noted that fishing for billfish with J-hooks trolled at high speeds and with heavy tackle did not result in high post-release hooking mortalities of Atlantic billfish species. Commenters also indicated that this fishing method was popular at Atlantic billfish tournaments and that fishing for Atlantic blue marlin with circle hooks may be ineffective. Also, commenters indicated that additional time was needed to allow Atlantic billfish tournament anglers to become more familiar and experienced with circle hook use. Because of these comments, NMFS considered development of an exempted fishing permit (EFP) program to collect data on this fishing activity in billfish tournaments. NMFS also received comment in support of fully implementing tournament circle hook requirements.

NMFS considered public comment received on an EFP program for this issue during the October 3-4, 2006, HMS Advisory Panel meeting (August 30, 2006; 71 FR 51577). NMFS issued a Notice of Intent to issue EFPs (November 27, 2006; 71 FR 68558) and received several public comments and applications from five Atlantic billfish tournament operators on behalf of 15 tournaments requesting exemptions from requirements for anglers fishing from HMS permitted vessels and participating in Atlantic billfish tournaments. The requests were received for tournaments that would operate in the U.S. southeast Atlantic and Gulf of Mexico.

Commenters expressed concern over the difficulty of standardizing fishing gear type and use in a tournament setting. Commenters also expressed concern over the quality of data collected in a tournament setting and the data's scientific applicability given the fishing characteristics of tournaments (fast paced activity, focus on catching and retaining specific species and/or size classes, and varying tournament rules). Finally, commenters expressed a general lack of support for conducting research and/or data collection in tournaments for the reasons stated above. NMFS worked with billfish tournament constituents to address the concerns over study design and data collection; however, difficulty continued in resolving many of the concerns.

As a result, NMFS determined that collection of data to evaluate the impacts of J-hooks and heavy tackle on Atlantic blue marlin during billfish tournaments in the U.S. Atlantic and Gulf of Mexico would be problematic because of the varying conditions and methodologies discussed above that would likely occur within and between tournaments. Therefore, NMFS decided not to proceed with issuing EFPs to collect data during Atlantic billfish tournaments to evaluate the impacts of J-hooks and heavy tackle on Atlantic marlin and published a notice to this effect in the Federal Register on February 1, 2007 (72 FR 4691).

On March 15, 2007, NMFS published a proposed rule (72 FR 12154), and supporting draft EA to temporarily suspend circle hook requirements for anglers participating in Atlantic billfish tournaments and reinstate the regulation on January 1, 2008. The comment period for the proposed rule closed on March 30, 2007. During the comment period, NMFS received comments on the alternatives including support for, and opposition to, modifying regulations to allow the use of J-hooks with natural bait/artificial lure combinations (combination baits) in Atlantic billfish tournaments; support for, and opposition to, a proposed temporary suspension of Atlantic billfish tournament circle hook requirements; support for eliminating Atlantic billfish tournament circle hook requirements; support for better defining circle hooks; and support for and expressed interest in funding further research on post-release hooking mortality of Atlantic billfish when J-hooks are trolled at high speeds with combination baits. Additionally, the HMS Advisory Panel voiced strong opposition to implementing a suspension during the last day of its March 13-15, 2007, meeting. During a subsequent conference call with approximately 50 Atlantic billfish tournament directors, general support was voiced for the preferred alternative to temporarily suspend Atlantic billfish tournament circle hook requirements and for additional regulatory modifications to allow the use of J-hooks with combination baits.

1.2. Need for Action and Objectives

The objectives of this document are to describe and analyze the ecological, economic, and social impacts of an alternative that would temporarily suspend regulations finalized in the 2006 Final Consolidated Highly Migratory Species Fishery Management Plan (Consolidated HMS FMP) (October 2, 2006; 71 FR 58058) that limits all anglers aboard HMS permitted vessels who are participating in Atlantic billfish tournaments to deploying only non-offset circle hooks when using natural baits or natural bait/artificial lure combinations. As a result of comments received regarding the final rule implementing Atlantic billfish tournament circle hook measures (October 2, 2006; 71 FR 58058), NMFS undertook this rulemaking. The objective of this action is to

increase post-release survival rates of Atlantic billfish in the long-term by allowing Atlantic billfish tournament anglers additional time to become proficient with circle hooks and familiar with their ecological benefits. NMFS received public comment expressing concerns over the ability of tournament participants to catch Atlantic blue marlin using circle hooks and requesting delays in implementation of circle hook requirements in Atlantic billfish tournaments, among other comments. The measures included in this final action are necessary to increase compliance with circle hook regulations by billfish tournament anglers, thereby leading to long-term increases in post-release survival rates of Atlantic billfish.

2.0 SUMMARY OF THE ALTERNATIVES

This section provides a summary and a brief description of the alternatives considered in this final rulemaking. These alternatives describe management measures that seek to improve post-release survival rates of Atlantic billfishes. The ecological, economic, and social impacts of these alternatives are discussed in later chapters.

Alternative 1: (No Action/Status quo) Maintain existing non-offset circle hook requirements for anglers fishing from Highly Migratory Species (HMS) permitted vessels and participating in Atlantic billfish tournaments.

This alternative would maintain existing regulations that require Atlantic billfish tournament participants who are fishing from HMS permitted vessels and deploying natural bait or natural bait/artificial lure combinations to use non-offset circle hooks.

Alternative 2: *Suspend existing non-offset circle hook requirements for anglers fishing from HMS permitted vessels and participating in Atlantic billfish tournaments through December 31, 2007.*

This is the preferred alternative and would suspend existing regulations that require Atlantic billfish tournament participants who are fishing from HMS permitted vessels and deploying natural bait or natural bait/artificial lure combinations to use non-offset circle hooks through December 31, 2007. Under this alternative, current non-offset circle hook requirements for Atlantic billfish participants would be reinstated, unchanged, at 12:01 a.m., January 1, 2008.

Alternative 3: Remove Atlantic billfish tournament circle hook requirements and promote voluntary use of circle hooks by tournament anglers.

This alternative would remove existing regulations that require Atlantic billfish tournament participants who are fishing from HMS permitted vessels and deploying natural bait or natural bait/artificial lure combinations to use non-offset circle hooks and would, through Agency outreach efforts, seek to encourage anglers to employ circle hooks on a voluntary basis. Voluntary use of circle hooks was promoted in the years prior to implementation of the circle hook regulation on January 1, 2007; however, this voluntary promotion did not achieve a high percentage of recreational angler use of circle hooks in the Atlantic billfish fishery. NMFS does

not anticipate that continued promotion of voluntary circle hook use alone by tournament anglers would result in achieving the maximum conservation benefit possible of reduced post-release mortality of Atlantic billfish relative to the no action alternative. Therefore, this alternative does not meet the purpose and need of this document or of the Consolidated HMS FMP and as such is not further analyzed here. However, this alternative may be considered as appropriate in the future.

3.0 DESCRIPTION OF THE AFFECTED ENVIRONMENT

Detailed descriptions of the life histories and population status of the species managed by NMFS are presented in Section 3.2 of the 2006 Stock Assessment and Fishery Evaluation (SAFE) Report which is contained within the Consolidated HMS FMP, and are not repeated here. Detailed information on physical features of the action area and habitats is presented in section 3.3 of the 2006 SAFE Report and is not repeated here. Detailed information on catch and bycatch of HMS by fishery are provided in Sections 3.4 and 3.8, respectively, of the 2006 SAFE Report and are not repeated here. Detailed information regarding the economic status of HMS fisheries, including recreational fisheries can be found in Section 3.5 of the 2006 SAFE Report and is not repeated here. Detailed information on protected species is contained in Section 3.9 of the 2006 SAFE Report and is not repeated here; however a discussion of the impacts of this rulemaking is included in Section 4.0 of this document. The information contained in the 2006 Safe Report and the Consolidated HMS FMP is incorporated into this document by reference. Detailed information on the universe of affected anglers is presented in Section 3.2 of this document.

3.1. Status of the Stocks

The October 2006 Report of the Standing Committee on Research and Statistics (SCRS 2006) indicates that blue marlin and white marlin remain overfished (Table 3.1). While the 2006 assessment includes significant uncertainty, it appears that recent abundance trends (2001-2004) have stabilized and may be slightly upward for white marlin and possibly stabilizing for blue marlin (Table 3.1, Figures 3.1 and 3.2). The SCRS reports that estimates of fishing mortality in 2004 were less than that needed for replacement of white marlin stocks and possibly less than that needed for replacement of blue marlin stocks. The SCRS also reported that blue and white marlin stocks have the potential to rebuild under the current ICCAT management plan, but this potential needs verification with an additional 4-5 years of data collection. Despite more positive results in the 2006 SCRS white and blue marlin stock assessment than existed in the 2002 stock assessment, the status of white marlin and blue marlin as overfished has not changed and the Consolidated HMS FMP objective to reduce post-release hooking mortality through strategies such as circle hook use in tournaments remains valid and necessary.

Table 3.1 Summary of Atlantic Blue and White Marlin Stock Assessment Data. Source SCRS, 2006

ATLANTIC BLUE MARLIN AND ATLANTIC WHITE MARLIN SUMMARY		
	White marlin	**Blue marlin**
$B_{2004} < {}^{1}B_{MSY}$	Yes	Yes
Recent abundance trend (2001-2004)	slightly upward	possibly stabilizing
$F_{2004} < F_{replacement}$	Yes	Possibly
$F_{2004} > {}^{1}F_{msy}$	Possibly	Yes
$^{2}Catch_{recent}/Catch_{1996}$ Longline and Purse seine	0.47	0.52
$^{3}Catch_{2004}$	610 t	2916 t
Rebuilding to B_{msy}	potential to rebuild under current management plan but needs verification	potential to rebuild under current management plan but needs verification
^{1}MSY	^{4}600-1,320 t	~ 2,000 t (1,000 ~ 2,400 t)

[1] As estimated during the 2000 and 2002 assessments.
[2] Catch recent is the average catch for 2000-2004.
[3] Estimate of total removals obtained by the Working Group. The preliminary catch reported for 2005 is 2,897 t for blue marlin and 475 t for white marlin. Final estimates for 2005 are likely to be greater.
[4] Range of estimates were obtained in the previous assessments, but recent analyses suggest that the lower bound for white marlin should be at least 600.

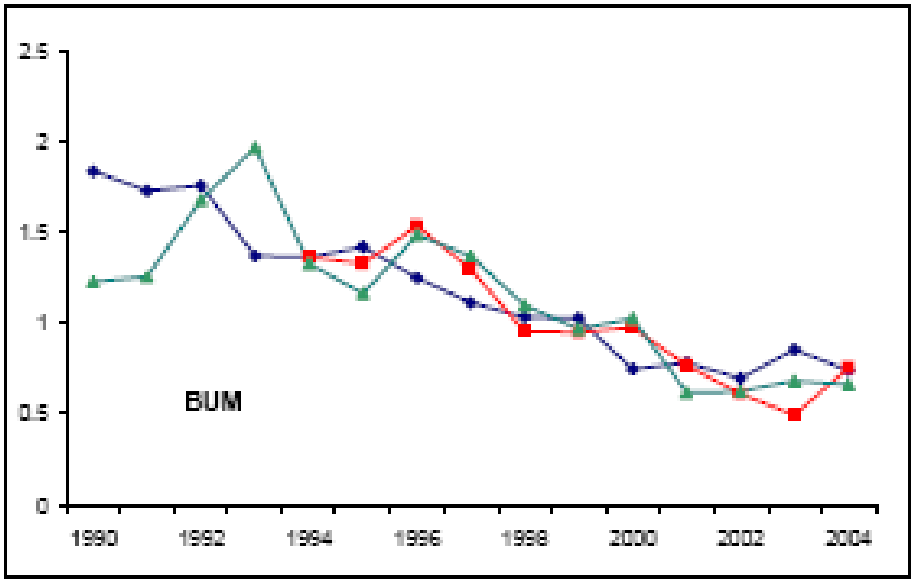

Figure 3.1 Relative abundance indices for blue marlin estimated by combining data for four longline fleets. Three different statistical models are shown for comparison. Source: SCRS, 2006.

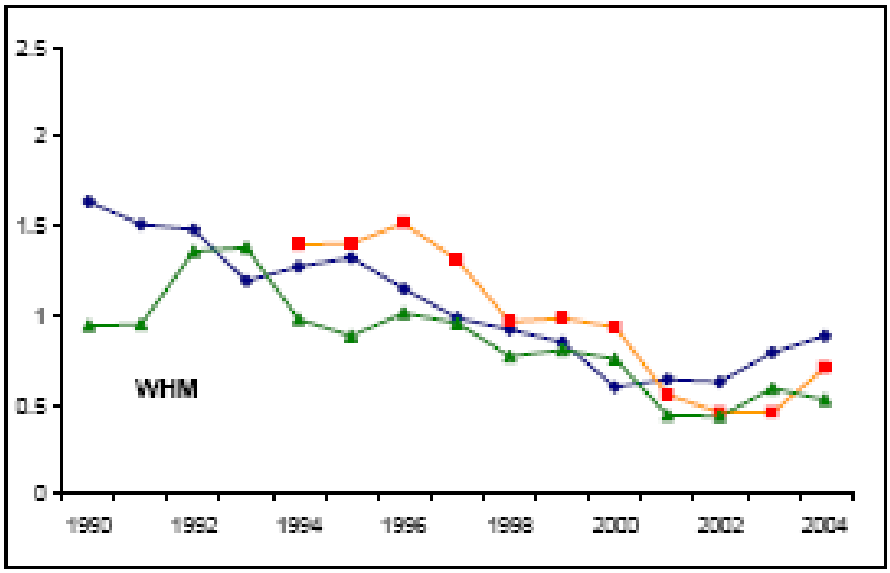

Figure 3.2 **Relative abundance indices for white marlin estimated by combining data for four longline fleets. Three different statistical models are shown for comparison. Source: SCRS, 2006.**

3.1.1. Atlantic Blue Marlin

Since 1995, blue marlin have been managed under a single stock hypothesis because of tagging data and mitochondrial DNA evidence that are consistent with one Atlantic-wide stock. A new assessment for Atlantic blue marlin was conducted in 2006. However, large catches of billfish continue to be reported to ICCAT as unclassified and reporting gaps remain for some important fleets, which introduced significant uncertainty into the recent assessment. As a result, specific quantitative reference points normally associated stock assessments could not be produced with reasonable confidence levels and the 2006 assessment focused instead on recent trends in abundance. It should be noted that these trends are based only on a few years of observations. Confirmation of these recent apparent changes in abundance trends of white marlin and blue marlin will require at least an additional four or five years of data (SCRS, 2006).

The recent biomass level most likely remains well below the B_{msy} estimated in 2000. Current estimates suggest that F has recently declined and is possibly smaller than $F_{replacement}$, but larger than the F_{msy} estimated in the 2000 assessment. Over the period 2001-2005 several abundance indicators suggest that the decline has been at least partially arrested, but some other indicators suggest that abundance has continued to decline. Confirmation of these recent apparent changes in trend will require at least an additional four or five years of data, especially since the reliability of the recent information has diminished and may continue to do so (SCRS, 2006).

3.1.2. Atlantic White Marlin

White marlin have been managed as a single stock by ICCAT since 2000. The 1996, 2000, and 2002 stock assessments for white marlin all indicated that biomass of white marlin has been below B_{msy} for more than two decades and the stock is overfished. As noted in the discussion of blue marlin, large catches of billfish continue to be reported to ICCAT as

unclassified and reporting gaps remain for some important fleets, which introduced significant uncertainty into the recent assessment. As a result, specific quantitative reference points normally associated stock assessments could not be produced with reasonable confidence levels and the 2006 assessment focused instead on recent trends in abundance. It should be noted that these trends are based only on a few years of observations. Confirmation of these recent apparent changes in abundance trends of white marlin and blue marlin will require at least an additional four or five years of data (SCRS, 2006).

The recent biomass of Atlantic white marlin most likely remains well below the B_{msy} estimated in the 2002 assessment. Current and estimates suggest that F is probably smaller than $F_{replacement}$ and probably also larger than the F_{msy} estimated in the 2002 assessment. Over the period 2001-2004, combined longline indices and some individual fleet indices suggest that the decline has been at least partially reversed, but some other individual fleet indices suggest that abundance has continued to decline. Confirmation of these recent apparent changes in trend will require at least an additional four or five years of data, especially since the reliability of the recent information has diminished and may continue to do so (SCRS, 2006).

3.1.3. Sailfish

Sailfish and longbill spearfish landings have historically been reported together in annual ICCAT landings statistics. An assessment was conducted in 2001 for the Eastern Atlantic sailfish stock based on sailfish/spearfish composite catches and sailfish only catches. All the quantitative assessment models used produced unsatisfactory fits. Catches of sailfish continue to be reported together with spearfish by many longline fleets. At present it is not possible to appropriately separate the catches of these two species. Large catches of unclassified billfish continue to be reported to the Committee. From 2001 to 2004 reported catch of unclassified billfish ranged from 12% to 30% of the reported catch of all billfish. For some fisheries this percentage is much greater. This continues to make the estimation of sailfish catch difficult.

No new assessments of the sailfish stocks have been conducted since 2001. No relative abundance indices have been presented since 2001. Although the 2001 attempts at quantitatively assessing the status of these two stocks (eastern and western sailfish) proved to be unsatisfactory, there were indications of early decreases in biomass for these two stocks. These decreases probably lowered the biomass of the stocks to levels that may be producing sustainable catches, but it is unknown whether biomass levels are below those that could produce MSY.

There is no new information available to change the outlook as presented in the 2001 report. Domestically, these stocks were identified as overfished with overfishing occurring in 1998. Given problems in quantitatively assessing the status of West Atlantic sailfish, the SCRS has indicated that it is unknown if the western or eastern sailfish stocks are undergoing over-fishing ($F>F_{MSY}$) or if the stocks are currently over-fished ($B<B_{MSY}$) and for these reasons the outlook for future conditions of the stocks are best interpreted based on the recent trends of CPUE and catch (Table 3.2 and Figure 3.3). Because no assessment has been conducted since 2001, no relative abundance indices are available after 2000, and given the uncertainty in the catch, the outlook for both the eastern and western stock is uncertain (SCRS 2006).

Table 3.2 Summary of Atlantic Sailfish Stock Assessment Data. Source SCRS, 2006

ATLANTIC SAILFISH SUMMARY[1]		
	West Atlantic	**East Atlantic**
Maximum Sustainable Yield (MSY)	Not estimated	Not estimated
Recent Yield (2000)	506 t	969 t
2000 Replacement Yield	~ 600 t	Not estimated
Management Measures in Effect	None	None

[1]As estimated in 2001.

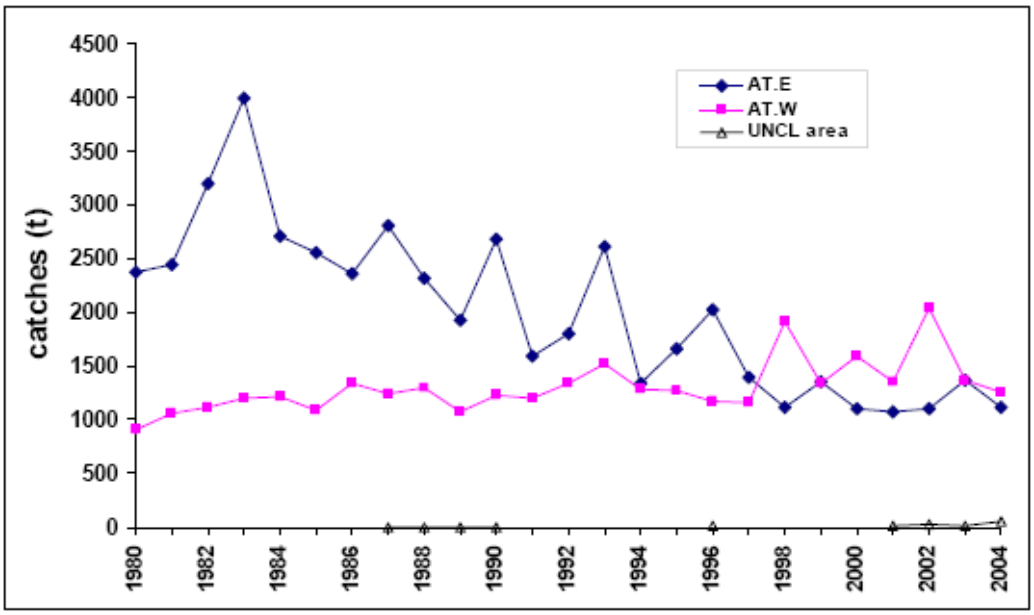

Figure 3.3 Reported Task I data of Sailfish and Spearfish Combined for east and west Atlantic Stocks. Source: SCRS, 2006.

3.2. Fishery Participants, Gear Types, Data, and Affected Area

As of January 29, 2007, there were 24,664 HMS Angling category permit holders and 4,140 HMS Charter/Headboat category permit holders able to legally pursue Atlantic billfish. An additional 4,345 General category permit holders can legally pursue Atlantic billfish while participating in registered HMS tournaments. NMFS also believes that the number of HMS Angling category permit holders, and perhaps CHB category permit holders, are lower than the actual number of vessels participating in the fishery (i.e. some unpermitted vessel may be illegally participating in the fishery). The only authorized gear for Atlantic billfish is rod and reel.

Chapter 4 of the 2006 Consolidated HMS FMP developed the premise that the two primary domestic sources of Atlantic billfish mortality include the Atlantic pelagic longline fishery and the directed recreational billfish fishery. During the period 1999-2005, mortality of Atlantic blue marlin resulting from pelagic longline dead discards exceeded recreational mortality attributable to recreational landings, in most years (Table 3.3). The exception was in 2003 when pelagic longline dead discards and recreational landings were equivalent. Dead discards of Atlantic white marlin from pelagic longline fishing substantially exceeded recreational landings of white marlin each year during this period. Conversely, recreational landings of Atlantic sailfish substantially exceeded pelagic longline dead discards each year during this period. From 1999 to 2005, the difference between pelagic longline dead discards and recreational landings has narrowed.

Table 3.3 **U.S. Pelagic Longline Dead Discards and Rod & Reel Landings of Atlantic Billfish (MT). Source: Pelagic U.S. National Reports to ICCAT 2003; 2004; 2005; 2006**

	BUM		WHM		SAI	
Year	**PLL DD**	**R&R**	**PLL DD**	**R&R**	**PLL DD**	**R&R**
1999	82.1	36.9	56.7	5.2	71.6	163.0
2000	59.6	24.2	40.8	1.3	45.4	75.7
2001	22.4	16.4	16.5	3.4	10.7	61.7
2002	48.0	17.1	33.0	5.6	7.0	103.0
2003	19.0	19.0	17.0	0.6	5.0	53.0
2004	35.0	26.0	27.0	0.7	5.0	0.2
2005	34.0	15.0	22.0	0.8	11.0	0.1

Known recreational landings of Atlantic billfish have remained at relatively low levels since 1999 due to minimum size requirements and a strong voluntary adherence to the practice of catch and release fishing. Despite the widespread practice of catch and release fishing in the Atlantic billfish fishery, recent data on post-release mortality rates of recreationally caught billfish indicate that the adverse ecological impacts of recreational activities on billfish resources may be greater than previously recognized.

Previous post-release survival estimates for billfish were thought to be in excess of 90 percent (NMFS, 1999). A study by Horodysky and Graves (2005) examining the post-release mortality in the recreational fishery for Atlantic white marlin strongly suggests that mortality levels using traditional J-hooks may be higher than previously assumed. Horodysky and Graves found that the mortality rate of white marlin associated with J-hooks was 35 percent. This number was higher than post-release mortality rates for other billfish species. Horodysky and Graves (2005) noted post-release mortality rates (from other studies) of 11 percent for blue marlin and 29 percent for striped marlin caught with this hook type. Given sample sizes of the studies examined, there is no statistical difference between the Horodsyky and Graves 35 percent post-release mortality rate for Atlantic white marlin and the 29 percent estimate identified for Pacific striped marlin. The recent white marlin post-release mortality statistics, when combined with estimates for the number of Atlantic blue and white marlin released by U.S. anglers, form the basis for NMFS' conclusion that the mortality contribution of the recreational billfish fishery is higher than previously estimated.

Table 3.4 presents the estimated number of white marlin mortalities that resulted from catch and release fishing activities for the period 1999 – 2006 based on NMFS' Recreational Billfish Survey (RBS) database. The RBS was designed to provide a complete census of tournament landings, and as such, is considered to be both accurate and precise. The RBS data represent the majority of verifiable domestic billfish landings. However, it is important to note that the RBS represents a subset of total billfish landings, and as such includes certain biases. Because the RBS captures only tournament landings, it captures a subset of aggregate U.S. catches. Further, given that tournament fishermen do not, as a general rule, land a fish that is smaller than one that has already been landed in a tournament, both the size and number of tournament landed fish and the release percentages that can be calculated from RBS data may be biased high relative to the fishery as a whole.

Table 3.4 **Estimated Post-Release Mortality (PRM) of White Marlin in Numbers of Fish Based on J-hooks and 35 Percent PRM Rate as derived from Data from the RBS. Source: Recreational Billfish Survey.**

Year	Live Releases	Estimated PRM
1999	1,402	491
2000	933	327
2001	1,254	439
2002	2,157	755
2003	561	196
2004	1,240	434
2005	2,053	719
2006	1,585	555

In deriving these estimates, an assumption was made that all billfish tournament anglers used J-hooks, as this data pre-dated existing circle hook requirements. NMFS acknowledges that an unquantified portion of billfish anglers currently use circle hooks, and, as such, this assumption could bias the estimates to higher than actual levels. NMFS currently does not have an estimate of the proportion of billfish anglers that regularly use circle hooks. Mortality estimates were derived by applying a post-release mortality rate of 0.35 (Horodysky and Graves, 2005) to the reported number of releases (e.g., 100 releases * 0.35 (post-release mortality rate) = 35 mortalities). Using this methodology, estimated release mortalities of Atlantic white marlin as a result of effort expended in billfish tournaments range from 196 to 755 based on RBS data (1999 – 2006). For the reasons discussed above, actual post-release mortalities of white marlin likely fall somewhere between these estimates but these data provide some indication of the magnitude of U.S. tournament induced recreational white marlin mortalities.

Utilizing the post-release mortality rates of Horodysky and Graves (2005), Table 3.5 estimates of total annual recreational white marlin mortality, which combines landings, dead discarded fish, and estimated post-release mortalities of white marlin released alive, vary greatly by year. The RBS database indicates that recreational white marlin mortality was 4,122 fish from 1999 – 2006. This represents a higher recreational mortality rate for white marlin than was considered in earlier FMPs (NMFS 1999).

Table 3.5 **Estimated Domestic Recreational Atlantic White Marlin Mortalities, in Number of Fish, as Derived from the RBS Database by Combining Retained Fish and Dead Discarded Fish with Estimated Post-Release Mortalities (PRM) (applying a 35% post-release mortality estimate) 2001-2004. Source: Recreational Billfish Survey; Horodysky, 2005**

Year	Retained	Discarded Dead	Live Releases	PRM	Annual Total
1999	36	0	1,402	491	526
2000	8	0	9,33	327	335
2001	22	0	1,254	439	461
2002	33	0	2,157	755	788
2003	20	0	561	196	216
2004	25	0	1,240	434	459
2005	26	0	2,053	719	745
2006	37	0	1,585	555	592
Sub-Totals	207	0	11,185	3,916	4,122
Total Mortality	4,122				
Average Mortality	515				

Table 3.6 presents the estimated number of Atlantic blue marlin post-release mortalities stemming from tournament activities for the period 1999 – 2006 based on the RBS database. Estimates were derived by applying a post-release mortality rate of 0.11 (Graves 2002) to the reported number of releases (e.g., 100 releases * 0.11 (post-release mortality rate) = 11 mortalities). Consistent with the calculations for white marlin above, NMFS assumed that all billfish anglers used J-hooks, as this data pre-dated existing circle hook requirements. NMFS acknowledges that some billfish anglers currently use circle hooks, and, as such, this assumption could bias the estimates to higher than actual levels. NMFS currently does not have an estimate of the proportion of billfish anglers that regularly use circle hooks. Between 1999 and 2006, estimated post-release mortalities of Atlantic blue marlin ranged from 95 to 157 fish based on RBS data. It is likely that the true post-release mortalities of blue marlin fall somewhere between these estimates, however these data provide some indication of the magnitude of U.S. tournament induced recreational blue marlin mortalities.

Table 3.6 **Estimated Post-Release Mortality (PRM) of Blue Marlin in Numbers of Fish Based on J-hooks and 11 Percent PRM Rate as derived from Data from the RBS. Source: Recreational Billfish Survey.**

Year	Live Releases	Estimated PRM
1999	1,216	134
2000	1,298	143
2001	863	95
2002	916	101
2003	974	107
2004	1,145	126
2005	1,429	157
2006	1,352	149

Additional information about the operation of U.S. HMS fisheries, including recreational fisheries, can be found in the 2006 SAFE Report in the Consolidated HMS FMP. The

Consolidated HMS FMP provides detailed information about the operation and management of the recreational and commercial HMS fisheries, including international and domestic management measures, and permitting and reporting requirements. Detailed information on fishery participants and recreational fishing tournaments are provided in Section 3.9 of the 2006 SAFE Report.

3.3. Habitat

The 2006 SAFE Report included in the Consolidated HMS FMP addresses the habitat utilized by the various species targeted by the U.S. recreational HMS fishery. Typically, recreational effort targeting billfish exist offshore and within the water column. As such, there is little or no interaction between fishing gears and bottom substrate and there is no measurable or identifiable impact with other essential fish habitat. Sailfish are on occasion found in more near-shore waters, however, in these instances fishing for sailfish still occurs within the water column with similar interactions and impacts on habitat as noted above.

3.4. Protected Species

There is little or no record of interactions between the recreational fishery for Atlantic billfish and protected, endangered, or threatened species. Additionally, the Consolidated HMS FMP discusses marine mammal and seabird interactions with HMS fisheries and the impact of the Marine Mammal Marine Mammal Protection Act (MMPA) on HMS management. Based on the number of interactions between HMS recreational fishermen and protected resources reported to NMFS, the interactions appear to be extremely rare.

4.0 ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES CONSIDERED

<u>Alternatives Considered for Atlantic Billfish Management Measures</u>

Alternative 1: (No Action/Status quo) Maintain existing non-offset circle hook requirements for anglers fishing from Highly Migratory Species (HMS) permitted vessels and participating in Atlantic billfish tournaments.

Alternative 2: (Preferred Alternative) Suspend existing non-offset circle hook requirements for anglers fishing from HMS permitted vessels and participating in Atlantic billfish tournaments through December 31, 2007.

4.1.1. Ecological Impacts

Alternative 1, the no action alternative, would maintain the status quo in the Atlantic billfish fishery. This alternative would maintain the regulation that became effective January 1, 2007, requiring the use of non-offset circle hooks by anglers fishing from HMS permitted vessels and participating in an Atlantic billfish tournament whenever natural baits or natural bait/artificial lure combinations are deployed.

Any tournament as defined under 50 CFR §635.2 that has an award category, or awards points or prizes for Atlantic billfish is considered a billfish tournament. Circle hooks are defined in 50 CFR §635.2 as "a fishing hook originally designed and manufactured so that the point is turned perpendicularly back to the shank to form a generally circular, or oval, shape." Natural bait/artificial lure combinations include, but are not limited to, rigs such as natural baits used in combination with artificial hoods, heads, and/or skirts.

Under alternative 1 (the no action alternative), post-release mortality benefits would continue to be primarily realized in the billfish tournament segment of the recreational fishery, but may also be realized outside of tournaments as anglers become comfortable and proficient with circle hooks and potentially increase their use voluntarily outside of tournaments. Under this alternative, voluntary use of circle hooks outside of tournaments may increase as a result of anglers wanting to improve their proficiency with circle hooks to improve their chances of winning money in tournaments where circle hooks would continue to be required. Top prizes offered in the largest tournaments have exceeded one million dollars for a winning billfish fish.

Alternative 1 (the no action alternative) would continue to allow the use of J-hooks with fully artificial lures in billfish tournaments. Fishermen tend to target white marlin and sailfish with natural baits while either drifting or slow trolling and target blue marlin by trolling at a higher rate of speed with the fish striking at the lure. Because of these fishing practices and feeding habits, it is believed that blue marlin have less opportunity to deeply ingest baits, therefore resulting in a higher proportion of hook-ups in the mouth with less damage to vital tissues and lower rates of post-release mortality. In a study evaluating pop-up satellite tags for estimating post-release survival of blue marlin from a recreational fishery, Graves et al., (2002) mouth hooked seven of nine blue marlin tagged by trolling at high speed using high speed lures or skirted dead baits with J-hooks. The remaining two fish were foul hooked. Comment presented to NMFS in a previous rulemaking strongly suggested that given the feeding habits of blue marlin, mandating circle hooks on artificial lures would reduce the viability of trolling for blue marlin. Given the relatively low post-release mortality rate of recreationally released Atlantic blue marlin (approximately 11 percent) and substantial public comment requesting continued use of J-hooks for targeting Atlantic blue marlin, NMFS developed that alternative to allow the continued use of J-hooks with fully artificial lures.

During public comment period on this rulemaking, NMFS received comment in support of Alternative 1, the no-action alternative, indicating the circle hook requirements should be maintained to assist in rebuilding stocks of overfished Atlantic billfish, that temporarily suspending billfish tournament circle hook requirements could slow momentum for using circle hooks, and that concerns over catch rates of Atlantic billfish with circle hooks were the result of inexperience with circle hooks, among other comments. NMFS anticipates that the one-time short-term suspension may cause approximately three hundred additional white marlin mortalities due to the potential use of J-hooks in tournaments during the temporary circle hook requirement suspension. NMFS anticipates that these additional mortalities may be offset in the future with improved compliance resulting from the preferred alternative. This number of additional one-time mortalities is not expected to cause a detectable change in white marlin population status. NMFS believes that a temporary suspension of billfish tournament circle hook

requirements which allows anglers time to become familiar and proficient with circle hooks prior to re-implementation will maximize circle hook usage and conservation benefits in the long-term. In addition, NMFS notes that comparable catch rates have been found for blue marlin using circle and J-hooks and certain techniques (Prince *et. al*, 2002) and that a number successful methods of rigging baits with circle hooks exist and are practiced, with recent publications highlighting some of these techniques. See the appendix for a full summary of comments and responses.

The benefit of decreased post-release mortality would likely continue under alternative 1 (the no action alternative) for sailfish, blue marlin, tunas, sharks, and, to a lesser extent, swordfish as well other non-HMS species with which billfish tournament anglers interact (blackfin tuna, mahi-mahi, wahoo, etc.), resulting from improved hooking location and decreased damage to vital tissues. The overall ecological impact of alternative 1 (the no action alternative) would continue to be positive; however, it would not address concerns of anglers that have led to resistance against circle hook use, such as a lack of familiarity and proficiency with circle hooks. As such, alternative 1 (the no action alternative) would likely fail to maximize the potential conservation benefits of circle hooks. Alternative 1 would likely continue to positively affect current trends in Atlantic-wide fishing mortality rates for both blue or white marlin and possibly other species with which billfish tournament anglers interact but at lower than optimal levels. The United States will continue to encourage other ICCAT nations to implement circle hooks in their commercial and recreational fleets to reduce post-release mortality of billfish and other HMS.

Alternative 1 (the no action alternative) would likely continue to provide positive ecological benefits for most, if not all, HMS species with which Atlantic billfish tournament fishermen interact. This alternative would be expected to maintain low mortality levels in the directed billfish fishery by keeping post-release mortality at low levels. There is mounting evidence that hook choice can impact fishing mortality rates. In a review and analysis of 43 previous post-release circle hook studies, Cooke and Suski (2004) found that circle hooks resulted in lower fishing mortality than other types of hooks and that mortality was consistently higher for J-hook caught fish. Factors identified as affecting mortality of released fish included hooking depth, anatomical hooking location, bleeding, and ease of hook removal. Cooke and Suski (2004), Prince et al. (2002), and Horodsky and Graves (2005) found that J-hook caught fish were more likely to be deep hooked than circle hook caught fish, circle hooks were more likely to result in jaw hooking than J-hooks, and J-hooks were more likely to cause tissue trauma resulting in bleeding. The reduced occurrence of deep hooking associated with circle hooks as compared to J-hooks reduces the opportunity for damage to vital organs and excessive bleeding. Cooke and Suski (2004) found that, in general, hooking mortality rates were reduced by approximately 50 percent by using circle hooks relative to J-hooks. The authors attributed the mortality reduction associated with the use of circle hooks to the tendency of circle hooks to jaw-hook fish, resulting in shallow hooking depths. Cooke and Suski (2004) also recommend that management agencies implement circle hook requirements only in instances in which appropriate scientific data for similar species exists. Nevertheless, taken in aggregate, the available science indicates that hook type can have an effect on survival of released fish.

In another recently released study on circle hooks, J-hooks, and drop-back time, Prince et al., (2006), evaluated the performance of non-offset circle hooks and a similarly sized J-hook used in the south Florida recreational live bait fishery for Atlantic sailfish. Sampling a total of 766 sailfish (392 caught on circle hooks; 374 caught on J-hooks), Prince et al. (2006) found that in terms of catch, hook locations, bleeding, and release condition, the traditionally-shaped circle hooks had the best performance with respect to conservation benefit for promotion of live release. While the Prince et al. (2006) did not examine post-release mortality data, the findings of the study reinforce the findings of other studies that traditionally shaped circle hooks may contribute to reductions in post-release mortality rates of Atlantic billfish by improving hooking locations, reducing bleeding, and improving release condition. As stated in Prince et al.(2006); "The general conclusion to be drawn from both studies [Horodysky and Graves 2005 and Prince et al. 2006] is that non-offset circle hooks promote live release in dead bait troll fisheries targeting white marlin and sailfish and that J-hooks do not." The study further found comparable catch rates between circle and J-hooks which is key to acceptance of circle hooks among anglers.

As previously discussed, Horodysky and Graves (2005) identified a post-release mortality rate of 35 (range 15 – 59) percent for recreationally caught Atlantic white marlin when J-hooks were used. During this study, 7 of 20 white marlin caught on J-hooks died, while none of the 20 white marlin caught on circle hooks died. Based on data from the same study, Dr. John Graves (pers. comm.) indicated that the research team identified a post-release mortality rate of 0-12 percent for Atlantic white marlin caught on circle hooks based on use of a statistical model and 10,000 runs of the data. As it is not a reasonable assumption that every fish caught on a circle hook and released would survive, this document used the 12% mortality rate during the analysis. Table 4.1 presents a retroactive estimate of the number mortalities of Atlantic white marlin that could have occurred from tournament releases had tournament circle hook requirements been in place from 1999 – 2006. This applies a 12 percent post-release mortality rate to the number of known tournament releases during that period. Based on these assumptions, Alternative 1 may result in between 67 and 259 Atlantic white marlin not surviving a catch and release event by tournament anglers during a typical year. Comment received on this rule indicated that post-release mortality of Atlantic white marlin caught on circle hooks and released may be even lower than the 12 percent estimate, however, this information has not yet been peer reviewed.

Table 4.1 **Retroactive Estimated Post-Release Mortalities (PRM) (in numbers of fish) of Tournament Caught Atlantic White Marlin for the Period 1999 – 2006 assuming Circle Hook Deployment and 12 Percent Post-Release Mortality. Source: RBS Database.**

YEAR	Released	PRM of Released WHM
1999	1,402	168
2000	933	112
2001	1,254	151
2002	2,157	259
2003	561	67
2004	1,240	149
2005	2,053	246
2006	1,585	190
Totals	11,185	1,342
Mean Annual PRM	168	

As of January 29, 2007, there were 24,664 HMS Angling category permit holders and 4,140 HMS Charter/Headboat category permit holders able to legally pursue Atlantic billfish. An additional 4,345 General category permit holders can legally pursue Atlantic marlin while participating in registered HMS tournaments. Further, NMFS believes that the number of HMS Angling category permit holders, and perhaps CHB category permit holders, are lower than the actual number of vessels participating in the fishery (i.e. some unpermitted vessels may be illegally participating in the fishery). The adverse ecological impacts of recreational activities on billfish resources are developed in detail in Chapter 4 of the Consolidated HMS FMP. This data reinforces alternatives 1 and 2 that it is appropriate to implement circle hook requirements in some segments of the recreational fishery to reduce post-release mortality associated with the directed billfish fishery.

According to the SCRS (2005) as reported in Chapter 3 (Table 3.21) of the Consolidated HMS FMP, the combined U.S. recreational landings and dead discards from commercial fisheries represent 2.84, 5.26, and 1.85 percent of the total Atlantic catch for blue marlin, white marlin, and sailfish respectively. While it is not possible to separate the proportion of recreational landings in these figures, Chapter 4 of the Consolidated HMS FMP analyzes further the ecological impacts of recreational activities on billfish resources. Considering this information, the overall ecological impact of alternative 1 (the no action alternative) would continue to be positive, but limited, given the relatively small contribution of U.S. anglers to total Atlantic-wide mortality. As such, either alternatives 1 or 2 would likely maintain relatively low levels of recreational post-release mortality resulting from billfish tournament activity for both blue and white marlin to some degree, but would not be capable of decreasing the Atlantic-wide fishing mortality rate to F_{msy}. Alternative 1 (the no action alternative) would not address concerns of angler compliance with circle hook requirements that may be resolvable by allowing anglers to become more familiar and proficient with circle hooks and thus would not likely maximize conservation benefits. While the benefits of requiring circle hooks are quantifiable for Atlantic white marlin, the benefits remain unquantifiable at this time for other species. As mentioned, Skomal et al. (2002) noted improved hooking location associated with circle hooks, which as discussed, may contribute to a reduced post-release mortality of bluefin tuna as compared to J-hooks. Still, there are relatively few data available on the efficacy and impacts of

using circle or J-hooks on sharks, other tunas, and swordfish, which could be used to quantify impacts on these species.

Alternative 2, the preferred alternative, would suspend existing non-offset circle hook requirements for anglers fishing from HMS permitted vessels and participating in Atlantic billfish tournaments through December 31, 2007. Under this alternative, the requirements would be re-implemented on January 1, 2008, with the intent to improve long-term compliance with HMS tournament circle hook regulations by providing additional time for billfish tournament anglers to become more familiar and proficient with circle hooks and increase awareness among tournament anglers of the benefits of circle hook use. NMFS is convinced that the concerns of anglers regarding the effectiveness of circle hooks for catching blue marlin and the resistance to using circle hooks stemming from preconceived ideas of circle hook efficacy and a lack of experience with circle hooks can be overcome if anglers are given more time to become familiar and proficient with them through an additional phase-in period. Existing studies show that hook type (circle hook vs. J-hook) is not a significant factor in catchability of Atlantic blue marlin (Prince *et. al*, 2002) and comments from fishermen and tournament operators indicate that circle hooks are preferred once anglers have adjusted to them because of a decrease in lost fish.

This alternative would have short-term adverse ecological impacts by temporarily suspending existing circle hook regulations. In order to show the short-term ecological impacts of suspending the circle hook rule in tournaments, Table 4.2 shows the number of white marlin that may not survive during the portion of 2007 that the requirement would be suspended. A lack of data on post-release survival of Atlantic blue marlin and sailfish do not allow comparable calculations for these species. The white marlin calculations are made using the same methodologies described earlier to estimate the benefit of circle hook over J-hook use. These calculations assume that all tournament anglers will use J-hooks instead of circle hooks during suspension of the rule. NMFS realizes that this is not the case and that a portion of tournament anglers will continue to use circle hooks as the rule requiring circle hooks use in Atlantic billfish tournaments was implemented January 1, 2007, and tournaments have been operating under this rule for a portion of 2007. No information is available to quantify the proportion of Atlantic billfish tournament anglers that would continue to fish with circle hooks during suspension of the rule. With this methodology, NMFS estimates that increased post-release mortality resulting from suspension of the circle hook regulations from May 15 - December 2007 as per Alternative 2 would result in approximately 318 additional white marlin mortalities. It is important to note that Alternative 2, the preferred alternative, would allow billfish tournament participants to use fishing methodologies that were used from 2001-2004 during which the SCRS reported slightly upward and possibly stabilizing abundance trends for white marlin and blue marlin respectively.

During the public comment period, NMFS received comment in support of and against Alternative 2, the preferred alternative. Many commenters supported the preferred alternative suggesting that additional time was needed for anglers to adjust to circle hooks, that NMFS should suspend tournament circle hook regulations and undertake additional research on various issues, specifically, the impact of combination baits and J-hooks, and that NMFS should better define circle hooks during a suspension. NMFS recognizes that effective fishing techniques employed when using circle hooks and J-hooks for Atlantic blue marlin may substantially differ (as discussed below), and therefore require additional time for anglers to adjust and become

proficient in their use. Commenters also requested regulatory changes that would allow use of combination baits and J-hooks. NMFS did not consider gear changes because NMFS has limited scientific data currently available on this gear configuration and a lack of information exists regarding the impacts of combination baits on other species, as well as other factors. Regarding the definition of circle hooks, NMFS is currently working with hook manufacturers and other stakeholders to improve the definition.

Comments opposing the preferred alternative were based primarily on grounds that a temporary suspension would harm rebuilding efforts. As previously discussed, NMFS anticipates that the one-time short-term suspension which allows the use of J-hooks may contribute approximately three hundred additional white marlin mortalities. This limited number of additional one-time mortalities is not expected to result in a detectable change in white marlin population status. Using the average weight of tournament landed white marlin (1999-2004), the estimated 300 additional mortalities represent approximately one percent of annual average white marlin catches as reported to ICCAT (Atlantic-wide catches). Furthermore, any such mortalities may be offset in the future with improved rates of post-release survivorship resulting from improved compliance under the preferred alternative. See Appendix A for a full summary of comments and responses.

Table 4.2 **Estimated Post-Release Mortality (PRM) of White Marlin (numbers of fish) Due to Suspension of Circle Hook Requirement in Atlantic Billfish Tournaments Based on J-hook Use (35% PRM) and Circle Hook Use (12% PRM). Estimated Additional J-hook Mortality Assuming 5/15/2007 Implementation of Circle Suspension is the Average J-hook Mortality minus the Average C-hook Mortality. Source: Recreational Billfish Survey.**

	Average Released per Month	Avg. J-hook Mortality of Released Fish/Month	Avg. C-hook Mortality of Released Fish/Month	Additional J-hook Mortality Assuming 5/15/07 Implementation
January	0	0	0	
February	0	0	0	
March	0	0	0	
April	5	2	1	
May	21	7	3	2
June	87	30	10	20
July	193	68	23	45
August	975	341	117	224
September	102	36	12	24
October	4	1	0	1
November	5	2	1	1
December	5	2	1	1
Total	1,397	489	168	318

An important premise of the preferred alternative is that anglers will become more familiar and proficient with circle hooks and increase awareness among tournament anglers of the benefits of circle hook use. Fishing techniques vary by species, region, time of day, weather conditions, type of gear and bait deployed, and numerous other factors. There are significant differences in the techniques employed by fishermen when using J-hooks and circle hooks. Two of the most obvious of these are “setting the hook” and baiting techniques. With J-hooks,

anglers are taught to "set the hook" at a given time by jerking hard on the pole and line. This action is meant to drive the point of the J-hook deep into the flesh of the fish to help ensure that the fish cannot escape by throwing the hook loose during the fight. With circle hooks, setting the hook is ineffective because of the hook shape and leads to a loss of the fish. Anglers must not set the hook, but rather wait for the fish to hook itself. This is a significant change in fishing technique for virtually all anglers and learning the subtleties of effective circle hook fishing can take a significant amount of practice. Baiting techniques or configurations can substantially vary between J-hooks and circle hooks. One example is with J-hooks, fishermen may bury the J-hook in the body of the bait, with only the point exposed through a slit in the stomach. With circle hooks, the hook must be free of obstructions and is thus sometimes attached to a halter made of fishing line above the head of a bait by rubber bands. Baiting techniques for circle hooks vary by bait species and target species. It may take a substantial amount of time for anglers to learn new baiting techniques effective with circle hooks. As previously discussed, several commenters expressed a desire for additional time to practice rigging and fishing with circle hooks. NMFS is confident that the provision of additional time for anglers to adjust to circle hook fishing and baiting techniques will allow for improved angling success and help assuage the concerns voiced by anglers leading to increased compliance with circle hook requirements.

Since the release of the 2006 Final EIS for the Consolidated HMS FMP, comments have been received by NMFS that express support for circle hook use both within and outside the tournament setting. Based on those comments and those received during development of the FEIS, NMFS believes that a portion of tournament anglers will continue to use circle hooks. Additionally, many tournament anglers have been using circle hooks as the rule was implemented January 1, 2007, and tournaments have been operating under this rule for a portion of 2007. Also, several tournaments voluntarily implemented circle hook use requirements in the rules of their tournaments reflecting the awareness of the conservation benefits of circle hooks. Voluntary use of circle hooks outside of tournaments during the suspension may continue or increase as a result of anglers wanting to improve their proficiency with circle hooks to improve their chances of winning money in tournaments in preparation for re-implementation of the circle hook requirement after December 31, 2007. Top prizes offered in the largest tournaments have exceeded one million dollars for a winning fish and anglers who have not gained substantial expertise with circle hooks will have a diminished chance of catching a prize winning fish. Additionally, NMFS has promoted, and plans continued promotion of, circle hook use in HMS and other fisheries to improve the realization of circle hook conservation benefits.

Neither alternatives 1 or 2 would be expected to increase interactions with protected resources. NMFS has little or no data showing interactions between the directed Atlantic billfish fishery and protected species. NMFS' HMS Management Division has received one anecdotal report of such an interaction since late 2002. Thus, interactions between the directed Atlantic billfish fishery and protected species appear to be extremely rare. If it results in improved long-term compliance with circle hook regulations, Alternative 2 may contribute to a long-term reduction of interactions as well as the mortality rates associated with any such interactions that may occur based on the hooking mechanics, improved hooking location, and decreased damage of vital tissues generally associated with the use of circle hooks.

4.1.2. Social and Economic Impacts

The economic and social costs and benefits of alternative 1 are anticipated to be minimal as the rule requiring circle hook use by HMS permitted vessels in Atlantic billfish tournaments was implemented January 1, 2007. Vessels with HMS angling, charter/headboat (CHB), or general category permits that participate in Atlantic billfish tournaments represent the universe of potentially affected vessels of alternative 1. More detailed information on fishery participants is presented in Section 3.2. Many Atlantic billfish tournaments and tournament participants have prepared for and are implementing tournament circle hook requirements consistent with existing regulations.

Given the multi-species nature of HMS permits and the fishery itself, it is not possible to accurately quantify the subpopulation of billfish anglers. Further, NMFS is not able to quantify the exact number of anglers or vessels participating in tournaments that may be impacted. For the period 1999 – 2006, an average of 43 vessels participated per tournament ranging from 9 to 114 vessels per tournament in Georgia and Maryland respectively. Over the same period, average participation varied by month ranging from 24 to 62 vessels per month in November and August respectively. In 2005 and 2006, there were 257 and 259 registered HMS tournaments respectively. These figures include all HMS tournaments, including billfish and non-billfish tournaments. From 1999 - 2006, an average of 165 U.S. billfish tournaments operated annually, ranging from 122 to 210 in 1999 and 2005 respectively based on RBS data. Combining the number of tournaments with the average number of vessels per tournaments is not, however, a reliable indicator of how many individual vessels participated in tournaments because many vessels participate in multiple tournaments each year.

Alternative 1 would be expected to maintain tournament participation at current levels given the high rates of participation in catch and release fishing and the continued availability of fish for landing under this alternative. Additionally, circle hooks have been found to actually improve the likelihood of catching some HMS, including some species of billfish. Nevertheless, NMFS has received anecdotal comment on a continuing basis leading the Agency to conclude that there may be decrease in willingness to pay and or a loss of angler consumer surplus under the existing regulations due to the perception that J-hooks are more efficient at catching billfish than circle hooks. Angler consumer surplus is the difference between the amounts consumers are willing to pay for products or services and the amounts they actually pay. Some anglers are concerned that if they are required to use circle hooks, they may catch fewer fish and have a less enjoyable experience. This perception may lead to a decrease in the amount an angler is willing to pay for a trip, and or a decrease in the difference between what they are willing to pay and how much they actually pay. Economic costs to tournaments would likely be minimal as alternative 1 has been in place since January 1, 2007 and given the increase in the number of all release tournaments. Furthermore, NMFS has not been able to identify any decrease associated with tournament registrations since the existing circle hook regulations became effective. The pace of registrations for 2007 is at or above the rate in recent years.

During the public comment period, several commenters associated with tournaments said that circle hooks have been required in their tournaments for some time and no negative impacts have been experienced because of that requirement. Other commenters expressed that confusion over existing regulations was expected if the no action alternative remained in place. Numerous

commenters also expressed concern about the affect of the circle hook requirement in Atlantic billfish tournaments on mixed species tournaments stating that circle hook requirements would reduce the ability to catch non-billfish species both offshore and inshore. See the Appendix A for a summary of the comments and responses.

NMFS cannot predict angler behavior with regard to participation in tournaments, demand for CHB trips, or trips taken by individual anglers in reaction to potential circle hook requirements. As such, if any tournaments are cancelled, demand for CHB trips decreases, or trips taken by individual anglers decline as a result of circle hook requirements, there could be unquantified adverse impacts depending on the size of the tournament or the number of CHB trips that may not be taken.

Low-level impacts of existing regulations on hook manufactures, retailers, and anglers would be anticipated to continue essentially unchanged under Alternative 1. Alternative 1 may result in a long-term increase in angler consumer surplus should this alternative assist in the recovery of Atlantic marlin. Also, alternative 1 would likely support the implementation of recreational circle hooks requirements through ICCAT. Compliance with existing circle hook regulations may not reach optimal levels under alternative 1, given continuing concerns expressed by anglers regarding deployment of circle hooks while fishing for Atlantic blue marlin in billfish tournaments.

During the public comment period, it was reported that some fishing lure manufacturers have experienced negative economic impact from reduces lure sales as a result of circle hook requirements imposed in Central America and leading up to the circle hook requirement in U.S. Atlantic billfish tournaments. However, this comment pertains to the impact of a previous rulemaking. Alternative 2, the preferred alternative, may provide a short-term bump in retail sales. See Appendix A for a full summary of the comments and responses.

The economic and social costs and benefits of alternative 2, the preferred alternative, on Atlantic billfish tournament anglers are anticipated to be minimal as the rule requiring circle hook use by HMS permitted vessels in Atlantic billfish tournaments was implemented January 1, 2007. Alternative 2 would suspend this rule through December 31, 2007, and provide for re-implementation of the rule on January 1, 2008. The temporary suspension of the rule should result in little economic impact for Atlantic billfish tournaments or participants as many of these have already prepared for and/or implemented tournament rules consistent with implementation of the rule requiring circle hook use in Atlantic billfish tournaments. Additionally, anglers are not required to fish with circle hooks outside of Atlantic billfish tournaments; therefore, temporary suspension of the circle hook requirement in tournaments represents an easing of restrictions on anglers that requires no new gear purchase if angers wish to use J-hooks within tournament rules. Under the preferred alternative, some tournament operators may choose to allow J-hooks to be used in their tournaments during the period of suspension. If so, this may necessitate printing of an addendum to the tournament rules by those tournament operators willing to allow J-hooks in their tournaments to inform tournament participants of the change. Given entry fees that can range into the thousands and prize money exceeding a million dollars in some cases, the cost of an additional printing of an addendum is not anticipated to represent a financial hardship for the tournaments.

NMFS does not anticipate that the preferred alternative would result in significant social impacts. However, limited long-term positive impacts are anticipated with the acceptance and improved implementation of circle hook use in Atlantic billfish tournaments if increased circle hook use aids stock recovery and increases the availability of billfish to anglers. Also, there is a possibility that minor short-term positive social impacts could accrue during the period when existing circle hook requirements would be suspended. Such potential positive short-term impacts could stem from increasing billfish tournament participation resulting from anglers' perception that J-hooks allow higher catch rates of Atlantic blue marlin. Available data (Prince *et. al*, 2002) do not support the perception of higher catch rates of Atlantic blue marlin on J-hooks as compared to circle hooks, but that perception exists among ardent J-hook supporters. Any increase in billfish tournament participation would be expected to be minor, and could result in small increases in the use of dockside services including purchases of fuel, berth space, bait and tackle sales, and hotel and restaurant sales.

Tables 4.3 and 4.4 show the aggregate tournament catches (landings and releases) of Atlantic blue and white marlin by state and month for the period 1999 – 2006. The data contained in tables 4.6 and 4.7 allow conclusions to be drawn regarding regionalized impacts of the rule. The following discussion assumes that; 1) higher numbers of tournament catches and releases equate to higher levels of tournament participation, 2) higher levels of tournament participation equates to higher levels of economic activity; and 3) that circle hook requirements are temporarily suspended effective May 15, 2007. Under such assumptions, with regard to Atlantic blue marlin, the six states and or territories that have the greatest possibility of seeing some small positive socio-economic impact as a result of a temporary suspension of existing tournament circle hook requirements are, in order: 1) Puerto Rico; 2) the U.S.V.I.; 3) North Carolina; 4) Louisiana; 5) Texas; and, 6) Florida. These states had the highest number of tournament catches and releases of Atlantic blue marlin. Under the same assumptions, with regard to Atlantic white marlin, the six states and or territories that have the greatest possibility of seeing some small positive socio-economic impact as a result of a temporary suspension of existing tournament circle hook requirements are, in order: 1) Maryland; 2) North Carolina; 3) New Jersey; 4) Florida; 5) Louisiana; and, 6) Virginia. These states had the highest number of tournament catches and releases of Atlantic white marlin. As stated above, any potential impacts would likely be small. As evidenced by the information presented in tables 4.6 and 4.7, any short-term benefits that may accrue would most likely be realized during the period June – September, inclusive. After September, tournament interactions with billfish precipitously decline.

Table 4.3 **Aggregate Tournament Landings and Releases of Atlantic Blue Marlin by State and Month 1999 – 2006. Source: NMFS Recreational Billfish Survey Database.**

	MONTHS												
STATES	1	2	3	4	5	6	7	8	9	10	11	12	TOTALS
AL	--				99	38	41	30	108	--	--	--	316
FL	6	1	2	5	103	80	293	91	18	14	48	1	662
GA	--	--	--	--	13	6	0	0	0	--	--	--	19
LA	--	--	--	--	58	215	278	152	107	--	21	249	1080
MA	--	--	--	--	--	--	--	31	--	--	--	--	31
MD	--	--	--	--	--	--	20	347	5	--	--	--	372
MS	--	--	--	--	--	201	9	26	--	--	--	--	236
NC	--	--	--	--	128	484	109	266	--	--	--	--	987
NJ	--	--	--	--	--	--	22	180	2	--	--	--	204
NY	--	--	--	--	--	--	2	0	--	--	--	--	2
PR	0	4	16	56	122	34	82	1026	1028	965	19	2	3354
RI	--	--	--	--	--	--	--	8	--	--	--	--	8
SC	--	--	--	3	124	107	122	1	--	--	--	--	357
TX	--	--	--	--	24	104	207	284	81	1	--	5	706
VA	--	--	--	--	--	--	18	18	--	--	--	--	36
VI	1	7	3	--	13	116	215	944	39	3	10	0	1351

Table 4.4 **Aggregate Tournament Landings and Releases of Atlantic White Marlin by State and Month 1999 – 2006. Source: NMFS Recreational Billfish Survey Database.**

	MONTHS												
STATES	1	2	3	4	5	6	7	8	9	10	11	12	TOTALS
AL	--	--	--	--	39	39	42	60	101	--	--	--	281
FL	2	1	--	5	7	66	269	74	17	23	18	--	482
GA	--	--	--	--	3	2	--	0	0	--	--	--	5
LA	--	--	--	--	7	74	89	56	47	--	11	42	326
MA	--	--	--	--	--	--	--	92	--	--	--	--	92
MD	--	--	--	36	--	1	172	3425	343	--	--	--	3977
MS	--	--	--	--	--	54	4	15	--	--	--	--	73
NC	--	--	--	--	62	389	356	2097	88	--	--	--	2992
NJ	--	--	--	--	--	0	374	1804	195	1	--	--	2374
NY	--	--	--	--	--	--	8	--	--	--	--	--	8
PR	1	--	1	1	3	1	3	7	--	8	14	0	39
RI	--	--	--	--	--	--	--	25	--	--	--	--	25
SC	--	--	--	1	40	45	64	2	--	--	--	--	152
TX	--	--	--	--	--	18	84	139	26	--	--	--	267
VA	--	--	--	--	--	4	86	193	--	--	--	--	283
VI	--	--	1	--	6		4	1	2	--	0	0	14

Alternative 2, the preferred alternative, may also result in a temporary decrease or increase in angler consumer surplus. This is because, conversely to alternative 1 above, persons that may experience loss of angler consumer surplus under the existing regulations due to the

perception that J-hooks are more efficient at catching billfish than circle hooks may experience gain in angler consumer surplus under alternative 2 in the short-term. Persons that support circle hook use in recreational billfish tournaments, such as those participating in tournaments that use only circle hooks, may experience loss of angler consumer surplus under alternative 2 in the short-term. Alternative 2 may result in a long-term increase in angler consumer surplus should this alternative assist in the recovery of Atlantic marlin. Also, alternative 2 may contribute to a delay in implementation of recreational circle hook requirements through ICCAT. Alternative 2 is anticipated to help resolve compliance problems. By temporarily suspending mandatory circle hook requirements and allowing anglers more time to become familiar and proficient with circle hooks, NMFS believes that greater numbers of anglers will readily accept circle hook use under the preferred alternative relative to Alternative 1. Given these anticipated gains in acceptance of circle hooks by anglers, and coupled with Agency efforts to enforce circle hooks, the increasing use of tournament observers, the conservation ethic of billfish anglers, and the vested financial self-interests of billfish tournament participants in ensuring that all tournament participants compete fairly under the same rules and conditions, NMFS anticipates high levels of compliance with circle hook requirements upon reinstatement effective January 1, 2008.

4.1.3. Conclusion

Multiple objectives of the 2006 Consolidated HMS FMP are addressed by this document including potentially reducing known sources of mortality such as post-release mortalities in the directed recreational marlin fishery over the long-term. Preferred alternative 2 would strike a balance between conserving living marine resources, maintaining recreational fisheries, and facilitating long-term compliance with HMS tournament circle hook regulations by providing additional time for billfish tournament anglers to become more familiar and proficient with circle hooks and increase awareness among tournament anglers of the benefits of circle hook use. The preferred alternative would be anticipated to have the benefit of a greater long-term reduction of post-release mortality of Atlantic white marlin relative to Alternative 1, and is likely to provide positive ecological benefits for other species, including blue marlin, sailfish, tunas, and others with which recreational billfish fishermen interact, while maintaining consistency with United States' international obligations. The temporary suspension of regulations under preferred alternative 2 would be anticipated to provide additional time for billfish tournament anglers to become more familiar and proficient with circle hooks and to increase awareness among tournament anglers of the benefits of circle hook use. The preferred alternative would achieve the purpose of this rulemaking and meet the objectives of the Consolidated HMS FMP by providing long-term protection to Atlantic billfish, maintaining a directed fishery for billfish, and achieving legal and policy obligations. Importantly, by providing a successful roadmap for billfish conservation, NMFS may provide the impetus for other nations to adopt similar management measures, thereby improving conservation of Atlantic billfish throughout their entire range.

4.2. Impacts on Essential Fish Habitat

The Magnuson-Stevens Act requires NMFS to evaluate the potential adverse effects of fishing activities on EFH. If NMFS determines that fishing gears are having an adverse effect on HMS EFH, or other species EFH, then NMFS must include management measures that minimize adverse effects to the extent practicable. At this time, there is no evidence to suggest that the

preferred alternative would affect EFH to the extent that detrimental effects can be identified on the habitat or fisheries. No HMS gear used in the directed Atlantic billfish fishery is considered to have an adverse effect on EFH.

The following measures considered in this Environmental Assessment are not expected to adversely impact HMS EFH, or EFH from other Federal or non-Federally managed species. Alternatives 1 (no action/*status quo* alternative) and 2 (preferred) both deal with requiring the use of circle hooks in the Atlantic billfish tournament fishery. This regulation was implemented on January 1, 2007, and would remain in place under alternative 1 or be suspended until January 2, 2008 under alternative 2. For both alternatives, the management measures deal with suspension of a hook(s) in the water column or trolling a hook(s) at the water's surface and as such pose no threat or impact on HMS or other species EFH.

4.3. Impacts on Other Finfish Species

Both alternatives 1 (no action/*status quo* alternative) and 2 (preferred) would require the use of circle hooks in the Atlantic billfish tournament fishery and as such would likely have conservation benefits for species that are targeted other than billfish. The preferred alternative, which would temporarily suspend billfish tournament circle hook requirements, would likely have minor short-term adverse impacts on finfish species by increasing post-release mortality rates over the no action alternative. However, in the long-term, Alternative 2 is anticipated to result in greater acceptance and use of circle hooks by billfish anglers, and thus result in greater conservation benefits in the long-term. These benefits are discussed in section 4.1 above.

4.4. Impacts on Protected Species Listed under the Endangered Species Act or Marine Mammal Protection Act

Alternatives 1 (no action/*status quo* alternative) and 2 (preferred) would not be expected to increase interactions with protected resources. NMFS has little or no data showing interactions between the directed Atlantic billfish fishery and protected species. NMFS has received one anecdotal report of such an interaction since late 2002. Thus, interactions between the directed Atlantic billfish fishery and protected species appear to be extremely rare. Alternative 2, which would temporarily suspend billfish tournament circle hook requirements, may have minor short-term adverse impacts on any protected species with which billfish anglers may interact, however, as noted above such interactions are extremely rare. In the long-term, Alternative 2 is anticipated to result in greater acceptance and use of circle hooks by billfish anglers, and thus, result in greater conservation benefits in the long-term. Both alternatives 1 and 2 may contribute to a long-term reduction of interactions as well as the mortality rates associated with any such interactions that may occur based on the hooking mechanics, improved hooking location, and decreased damage of vital tissues generally associated with the use of circle hooks.

4.5. Environmental Justice Concerns

Executive Order 12898 requires that Federal actions address environmental justice in the decision-making process. In particular, the environmental effects of the actions should not have a disproportionate effect on minority and low-income communities. The final actions in this

document would not have any effects on human health. Additionally, the final actions are not expected to have any social or economic effects and should not have a disproportionate effect on minority and low-income communities.

4.6. Coastal Zone Management Act Concerns

In February 2007, NMFS sent all the coastal states in the Atlantic, Gulf of Mexico, and Caribbean a letter requesting, per 15 CFR 930.36(b), a 21-day review time frame for the consistency determination rather than a 60 day review time frame as required under 15 CFR Part 930.41(a) to ensure that NMFS would have the appropriate time needed to have the final rule effective in May 2007, prior to the peak of the Atlantic billfish tournament season. NMFS received responses from ME, NH, CT, RI, NJ, DE, PA, VA, SC, GA, FL, and PR agreeing to the shorten review time frame. NMFS received letters from NY and NC disagreeing with the shorter timeframe. NMFS stated in the February 2007 request that if no response was received by March 1, 2007, NMFS would assume that the request was acceptable. NMFS did not receive responses from MD, AL, MS, and USVI and, therefore, NMFS presumes concurrence with the request for the shortened review time period.

On March 12, 2007, NMFS provided all the coastal states with the consistency determination letter, copies of the proposed rule and the draft Environment Assessment. In this letter, NMFS determined that this final rule is consistent to the maximum extent practicable with the enforceable policies of the approved coastal management program of coastal states on the Atlantic including the South Atlantic, Gulf of Mexico and Caribbean that have approved coastal zone management programs. NMFS received letters of concurrence with the consistency determination from the following states: NH, CT, RI, DE, NC, FL, MS, LA, PA, and VA. NMFS has received verbal statements of concurrence from state program officer in NY. NMFS has not yet received letters of concurrence from GA, AL, ME, NJ, MD, SC, PR, and USVI and, therefore, NMFS presumes concurrence with the consistency determination.

4.7. Comparison of the Alternatives

Table 4.5 compares the impacts of the various alternatives considered in this document. The symbols "+", "-", and "0" refer to positive, negative, and zero impacts, respectively. Minor impacts, and impacts that are possible but unlikely, are denoted with a single plus or minus sign. Moderate impacts are denoted with a double plus or minus sign, and significant impacts are denoted with a triple plus or minus sign. Please refer to the preceding sections for additional explanations of the impacts associated with each alternative.

Table 4.5 Comparison of the Alternatives

Alternative	Ecological Impacts	Economic Impacts	Social Impacts
1 (no action/*status quo*)	+	0	0
2 (suspend circle hook requirement through 12/31/2007)	+ (long-term)	0	+

4.8. Cumulative Impacts

Cumulative impacts on the directed Atlantic billfish fishery are expected to be minimal. Alternative 2 (preferred alternative) would relieve requirements during the period that the rule is suspended. Other management measures that affect the directed Atlantic recreational HMS fishery include permitting for HMS angling category (recreational), HMS charter/headboat, and Atlantic tunas general category vessels. HMS general category permitees may only land Atlantic billfish when participating in a tournament. Size limits exist for Atlantic billfish species with a no retention provision for longbill spearfish. A landings limit exists for Atlantic blue and white marlin combined of 250 fish annually for the entire U.S. recreational fishery in the Atlantic and Gulf of Mexico. Bag and size limits exist for other HMS species. Finally, rod and reel is the only approved gear for taking of Atlantic billfish.

Cumulative economic impacts on the directed Atlantic billfish fishery from the above management measures are expected to be minimal. This is evidenced by stable or growing numbers of HMS angling category and charter/headboat permits sold annually for recreational HMS fisheries and growing numbers of tournament registrations annually. Based on the pace of 2007 tournament registrations, during which the no action alternative has been in place, no decrease in tournament activity has been identified, and in fact, tournament registrations for 2007 have been received by NMFS at a near record pace.

The pelagic longline (PLL) fishery indirectly interacts with Atlantic billfish and management measures exist to reduce interactions and reduce fishing mortality. These include the closed areas of the Charleston Bump (closed annually from February 1 – April 30), the East Florida Coast (closed year round), and the Desoto Canyon (closed year round). PLL gear outside of the Northeast Distant Gear Restricted Area are restricted to possessing and/or using only 18/0 or larger circle hooks with an offset not to exceed 10 decrees, or 16/0 or larger non-offset circle hooks and only whole finfish and/or squid bait may be used on pelagic longlines. Live bait may not be used in the Gulf of Mexico. The sale of Atlantic billfish is prohibited as is retention of Atlantic billfshes aboard commercially permitted vessels.

Cumulative economic impacts have occurred on the domestic PLL fishery resulting from implementation of the restrictive management measures listed above. The preferred alternative affects only the directed recreational Atlantic billfish fishery, however, and NMFS does not expect significant adverse cumulative economic impacts on the PLL fishery from this action.

While the October 2006 Report of the Standing Committee on Research and Statistics (SCRS 2006) indicates that blue marlin and white marlin remain overfished, as discussed in Section 3, recent abundance trends show that declines prior to 2001 may not be continuing. The 2006 assessment includes significant uncertainty, but reports that recent abundance trends (2001-2004) are slightly upward for white marlin and possibly stabilizing for blue marlin (Table 3.1, Figures 3.1 and 3.2). The SCRS reports that estimates of fishing mortality in 2004 were less than that needed for replacement of white marlin stocks and possibly less than that needed for replacement of blue marlin stocks. The SCRS also reported that blue and white marlin stocks have the potential to rebuild under the current ICCAT management plan, but this potential needs verification with an additional 4-5 years of data collection. The SCRS also reports that the status

of sailfish is uncertain as discussed in Section 3 above. Such information indicates that additional mortality of an estimated 318 white marlin and an unknown amount of additional mortality for blue marlin and sailfish resulting from the preferred alternative would not cause declines in the abundance of Atlantic billfish stocks. The preferred alternative to temporarily suspend the circle hook requirement in Atlantic billfish tournaments will allow anglers in tournaments to continue using fishing methodologies that were used from 2001-2004 during which the SCRS reported slightly upward and possibly stabilizing abundance trends for white marlin and blue marlin respectively. The cumulative impact of the preferred alternative on the resources within the action area is anticipated to be positive in the long-term by contributing to rebuilding of overfished Atlantic billfish stocks while having few and limited adverse impacts on the human environment, as previously discussed.

NMFS is conducting an ESA status review of white marlin that is expected to conclude in December 2007. Through this review, NMFS will analyze all sources of mortality, management measures, and the various issues related to the status of white marlin stocks. The determination of this review could necessitate a future rulemaking. Interactions with protected resources are not anticipated to increase due to the preferred alternative.

During the public comment period, commenters expressed concern over temporarily suspending the circle hook requirement in Atlantic billfish tournaments and the potential for an increase in white marlin mortalities that may result. As previously noted, the small number of additional one-time mortalities is not expected to result in a detectable change in white marlin population status. Commenters were particularly worried about the effect that this would have on the ESA status review currently underway for white marlin. See the appendix for summary of comments and responses.

5.0 MITIGATION AND UNAVOIDABLE ADVERSE IMPACTS

5.1. Mitigating Measures

Alternative 2, the preferred alternative, is not likely to have significant long-term adverse ecological impacts. The alternative is designed to reduce post-release mortality of billfish, and other species with which billfish tournament anglers interact by increasing long-term compliance with the circle hook requirements in Atlantic billfish tournaments. In the short-term, during the period when existing circle hook regulations would be suspended, there would be a limited number of additional billfish mortalities due to J-hook use that would not occur if the circle hook requirement were maintained. This possibility is discussed in more detail in Chapter 4. These short-term mortalities would likely be mitigated by the preferred alternative's goal of increased post-release survival of billfish through improved compliance with the circle hook requirement in the long-term.

Additionally, to mitigate for short-term adverse impacts, NMFS will continue to conduct outreach efforts to notify Atlantic billfish tournaments and tournament participants of the circle hook requirement to be re-implemented and NMFS will continue to encourage voluntary use of circle hooks outside the Atlantic billfish tournament setting during suspension of the rule. As developed in Chapter 4, voluntary use of circle hooks outside of tournaments during the suspension may continue or increase as a result of anglers wanting to improve their proficiency

with circle hooks to improve their chances of winning money in tournaments in preparation for re-implementation of the circle hook requirement after December 31, 2007. Top prizes offered in the largest tournaments have exceeded one million dollars for a winning fish and anglers who have not gained substantial expertise with circle hooks will have a diminished chance of catching a prize winning fish. As such, it is reasonable to assume that tournament participants will continue to voluntarily use circle hooks when fishing outside of a tournament and during suspension of the rule. Many anglers have already transitioned to circle hook use due to the hook's conservation benefit and to implementation of the requirement in tournaments on January 1, 2007. It is also reasonable to assume that Atlantic billfish tournament anglers will continue to practice with circle hooks outside of the tournament setting to improve their expertise in tournament competition. NMFS will continue to monitor the impacts of the preferred alternative and will consider mitigation measures in the future as necessary.

5.2. Unavoidable Adverse Impacts

The preferred alternative would assist NMFS in achieving the objective of this rulemaking and the Magnuson-Stevens Act, but will have some unavoidable adverse impacts as described and developed in Section 4.1 above.

5.3. Irreversible and Irretrievable Commitment of Resources

The preferred alternative would assist NMFS in achieving the objective of this rulemaking and the Magnuson-Stevens Act and are not expected to have any irreversible or irretrievable commitments of resources. The preferred alternative would not limit or preclude NMFS from making future reasonable decisions or taking future reasonable actions related to this topic.

6.0 ECONOMIC EVALUATION

This section assesses the economic impacts of the alternatives presented in this document. NMFS considered one no action/*status quo* alternative and one preferred alternative to address reducing post-release mortality of Atlantic billfishes. Additional economic and social considerations and information are discussed in Chapters 3, 4, 7, 8, and 9 of this document.

6.1. HMS Recreational Permits

In order to examine the baseline universe of entities potentially affected by the preferred alternative, NMFS analyzed the number of permits that were issued as of January 29, 2007 in conjunction with HMS fishing activities (Table 6.1). There are three types of permits associated with HMS recreational fishing activity. The HMS angling category permit is required for any angler fishing for Atlantic HMS and the sale of fish is prohibited. The HMS CHB permit allows for the sale of Atlantic tunas and allows CHB vessels to catch and land sharks, swordfish, and billfish pursuant to the recreational regulations (i.e. no sale of fish). The CHB permit holder may also hold a swordfish handgear and/or shark limited access permit that allows for the sale of those species under the regulations for those permits. The Atlantic tunas general category permit

holder may recreationally fish for Atlantic billfish, sharks, swordfish, and tunas only if participating in an HMS registered tournament and the sale of fish is prohibited.

Table 6.1. Number of HMS permits issued as of January 29, 2007 that may participate in HMS registered tournaments.

Category	Number of Permits
HMS Angling	24,664
HMS Charter/Headboat	4,140
Atlantic Tunas General	4,345

6.2. Costs and Revenues of Fishermen

A detailed discussion of recreational fisheries costs and revenues may be found in Chapter 6 of the Consolidated HMS FMP. An economic survey done by the U.S. Fish & Wildlife Service in 2001 found that for the entire United States 9.1 million saltwater anglers (including anglers in state waters) went on approximately 72 million fishing trips and spent approximately $8.4 billion (USFWS, 2001). Expenditures included lodging, transportation to and from the coastal community, vessel fees, equipment rental, bait, auxiliary purchases (*e.g.*, binoculars, cameras, film, foul weather clothing, *etc.*), and fishing licenses (USFWS, 2001). Saltwater anglers spent $4.5 billion on trip-related costs and $3.9 billion on equipment (USFWS, 2001). Approximately 76 percent of the saltwater anglers surveyed fished in their home state (USFWS, 2001).

Specific information regarding angler expenditures for trips targeting HMS species was extracted from the recreational fishing expenditure survey add-on (1998 in the Northeast, 1999 – 2000 in the Southeast) to the National Marine Fisheries Service's Marine Recreational Fisheries Statistics Survey (MRFSS). These angler expenditure data were analyzed on a per person per trip-day level and reported in 2003 dollars. The expenditure data include the costs of tackle, food, lodging, bait, ice, boat fuel, processing, transportation, party/charter fees, access/boat launching, and equipment rental. The overall average expenditure on HMS related trips is estimated to be $122 per person per day. Specifically, expenditures are estimated to be $686 per person per day on billfish directed trips (based on a low sample size), $85 on pelagic shark directed trips, $95 on large coastal shark directed trips, $81 on small coastal sharks, and $106 on tuna trips.

The American Sportfishing Association (ASA) also has a report listing the 2001 economic impact of sportfishing on specific states. This report states that all sportfishing (in both Federal and state waters) has an overall economic importance of $116 billion dollars (ASA, 2001). Florida, Texas, North Carolina, New York, and Alabama are among the top ten states in terms of overall economic impact for both saltwater and freshwater fishing (ASA, 2001). Florida is also one of the top states in terms of economic impact of saltwater fishing with $2.9 billion in angler expenditures, $5.4 billion in overall economic impact, $1.5 billion in salaries and wages related to fishing, and 59,418 fishing related jobs (ASA, 2001). California followed Florida with $0.8 billion in angler expenditures, $1.7 billion in overall economic impact, $0.4 billion in

salaries and wages, and 15,652 jobs (ASA, 2001). Texas and New Jersey were the next highest states in terms of economic impact (ASA, 2001).

At the end of 2004, NMFS began collecting market information regarding advertised charterboat rates. This preliminary analysis of the data collected includes 99 observations of advertised rates on the internet for full day charters. Full day charters vary from six to 14 hours long with a typical trip being 10 hours. Most vessels can accommodate six passengers, but this also varies from two to 12 passengers. Table 6.2 summarizes the average charterboat rate for full day trips on vessels with HMS Charter/Headboat permits. The average price for a full day boat charter was $1,053 in 2004. Sutton *et al.*, (1999) surveyed charterboats throughout Alabama, Mississippi, Louisiana, and Texas in 1998 and found the average charterboat base fee to be $762 for a full day trip. Holland *et al.* (1999) conducted a similar study on charterboats in Florida, Georgia, South Carolina, and North Carolina and found the average fee for full day trips to be $554, $562, $661, and $701, respectively. Comparing these two studies conducted in the late 1990s to the average advertised daily HMS charterboat rate in 2004, it is apparent that there has been a significant gain in charterboat rates.

Table 6.2 **Average Atlantic HMS charterboat rates for day trips. Source: NMFS searches for advertised daily charter rates of HMS Charter/Headboat permit holders. (Observations=99)**

State	2004 Average Daily Charter Rate
AL	**$1,783**
CT	**$1,500**
DE	**$1,060**
FL	**$894**
LA	**$1,050**
MA	**$777**
MD	**$1,167**
ME	**$900**
NC	**$1,130**
NJ	**$1,298**
NY	**$1,113**
RI	**$917**
SC	**$1,300**
TX	**$767**
VA	**$825**
Overall Average	$1,053

In 2003, Ditton and Stoll published a paper that surveyed the literature regarding what is currently known about the social and economic aspects of recreational billfish fisheries. It was estimated that 230,000 anglers in the United States spent 2,136,899 days fishing for billfish in 1991. This is approximately 3.6 percent of all saltwater anglers over age 16. The states with the highest number of billfish anglers are Florida, California, North Carolina, Hawaii, and Texas in

descending order. Billfish anglers studied in the U.S. Atlantic, Puerto Rico, and Costa Rica fished between 39 and 43 days per year.

Billfish recreational anglers tend to spend a great deal of money on trips. Ditton and Stoll (2003) report that a 1990 study of U.S. total trip costs for a typical billfish angler estimated a mean expenditure of $2,105 per trip for the Atlantic and $1,052 per trip for Puerto Rico. The aggregate economic impact of billfish fishing trips in the U.S. Atlantic is conservatively estimated to be $22.7 million annually.

In addition to the economic impact of recreational billfish angling, Ditton and Stoll (2003) report that using a contingent valuation method they estimated consumer's surplus or net economic benefit to maintain current billfish populations in the U.S. Atlantic to be $497 per billfish angler per year in the U.S. Atlantic and $480 in Puerto Rico. They also estimate that the number of annual billfish anglers in the U.S. Atlantic to be 7,915 and 1,627 in Puerto Rico. The aggregate willingness-to-pay for maintaining current billfish populations is $3.93 million in the U.S. Atlantic and 0.78 million in Puerto Rico. The aggregate direct impact of billfish expenditures is estimated to be $15.13 million for the U.S. Atlantic and $32.40 million for Puerto Rico. Thus, the total aggregate economic value of billfish angler fishing is $19.06 million per year for the U.S. Atlantic and $33.18 million per year for Puerto Rico.

Generally, HMS tournaments last from three to seven days, but lengths can range from one day to an entire fishing season. Similarly, average entry fees can range from approximately $0 to $5,000 per boat (average approximately $500/boat – $1,000/boat), depending largely upon the magnitude of the prize money that is being awarded. The entry fee would pay for a maximum of two to six anglers per team during the course of the tournament. Additional anglers can, in some tournaments, join the team at a reduced rate of between $50 and $450. The team entry fee did not appear to be directly proportional to the number of anglers per team, but rather with the amount of money available for prizes and, possibly, the species being targeted. Prizes may include citations, T-shirts, trophies, fishing tackle, automobiles, boats, or other similar items, but most often consists of cash awards. In general, it appears that billfish and tuna tournaments charge higher entry fees and award more prize money than shark and swordfish tournaments.

Cash awards distributed in HMS tournaments can be quite substantial. Several of the largest tournaments, some of which are described below, are part of the World Billfish Series Tournament Trail whereby regional winners are invited to compete in the World Billfish Series Grand Championship for a new automobile and a bronze sculpture. Other tournament series include the International Game Fish Association (IGFA) Rolex Tournament of Champions, and the South Carolina Governor's Cup. White marlin is a top billfish species from Cape Hatteras, North Carolina to the eastern tip of Georges Bank from June through October each year. The White Marlin Open in Ocean City, Maryland, which is billed as the "world's richest fishing tournament," established a new world record payout for catching a fish when it awarded $1.32 million in 2004 to the vessel catching the largest white marlin. The 21st Annual Pirates Cove Billfish Tournament in North Carolina awarded over $1 million in prizes in 2004, with the top boat garnering over $400,000 for winning in six categories. Total prize money awarded in the Big Rock Tournament in North Carolina has exceeded $1 million since 1998.

Blue marlin, sailfish, and tunas are also often targeted in fishing tournaments, including those discussed above. In 2004, blue marlin was the HMS most frequently identified as a prize category in registered HMS tournaments. Forty-five teams participated in the 2004 Emerald Coast Blue Marlin Classic at Sandestin, Florida, with over $482,000 in cash prizes and the top boat receiving over $58,000. The 34th Annual Pensacola (Florida) International Billfish Tournament indicated that it would award over $325,000 in cash and prizes in 2004. The World Sailfish Championship in Key West, Florida has a $100,000 guaranteed first prize for 2005. In South Carolina, the Megadock Billfishing Tournament offers a $1,000,000 prize for any boat exceeding the current blue marlin state record. The 2004 Florida Billfish Masters Tournament in Miami, Florida awarded over $123,000 in prize money, with the top boat receiving over $74,000. Sixty-two boats competed in the 2003 Babylon Tuna Club Invitational in Babylon, New York for over $75,000 in cash prizes, and the Mid-Atlantic Tuna Tournament sponsored by the South Jersey Marina in Cape May, New Jersey anticipates awarding over $25,000 in prizes in 2005.

In addition to official prize money, many fishing tournaments may also conduct a "calcutta" whereby anglers pay from $200 to $5,000 to win more money than the advertised tournament prizes for a particular fish. Tournament participants do not have to enter calcuttas. Tournaments with calcuttas generally offer different levels depending upon the amount of money an angler is willing to put down. Calcutta prize money is distributed based on the percentage of the total amount entered into that Calcutta. Therefore, first place winner of a low level Calcutta (entry fee ~$200) could win less than a last place winner in a high level calcutta (entry fee ~$1000). On the tournament websites, it was not always clear if the total amount of prizes distributed by the tournament included prize money from the calcuttas or the estimated price of any equipment. As such, the range of prizes discussed above could be a combination of fish prize money, Calcutta prize money, and equipment/trophies.

Fishing tournaments can sometimes generate a substantial amount of money for surrounding communities and local businesses. Besides the entry fee to the tournament and possibly the calcutta, anglers may also pay for marina space and gas (if they have their own vessel), vessel rental (if they do not have their own vessel), meals and awards dinners (if not covered by the entry fee), hotel, fishing equipment, travel costs to and from the tournament, camera equipment, and other miscellaneous expenses. Fisher and Ditton (1992) found that the average angler who attended a billfish tournament spent $2,147 per trip (2.59 days), and that billfish tournament anglers spent an estimated $180 million (tournament and non-tournament trips) in 1989. Ditton and Clark (1994) estimated annual expenditures for Puerto Rican billfish fishing trips (tournaments and non-tournaments) at $21.5 million. More recently, Ditton, *et al*., (2000) estimated that the total expenditure (direct economic impact) associated with the 1999 Pirates Cove Billfish Tournament, not including registration fees, was approximately $2,072,518. The total expenditure (direct economic impact) associated with the 2000 Virginia Beach Red, White, and Blue Tournament was estimated at approximately $450,359 (Thailing, *et al*., 2001). These estimated direct expenditures do not include economic effects that may ripple through the local economy leading to a total impact exceeding that of the original purchases by anglers (*i.e*., the multiplier effect). Less direct, but equally important, fishing tournaments may serve to generally promote the local tourist industry in coastal communities. In a survey of participants in the 1999 Pirates Cove Billfish Tournament, Ditton, *et al*., (2000) found that

almost 80 percent of tournament anglers were from outside of the tournament's county. For this reason, tourism bureaus, chambers of commerce, resorts, and state and local governments often sponsor fishing tournaments.

6.3. Expected Economic Impacts of the Alternatives Considered

Two alternatives were considered for management of the directed Atlantic billfish fishery. The economic impacts of alternative 1 are anticipated to be minimal as the rule requiring circle hook use by HMS permitted vessels in Atlantic billfish tournaments was implemented January 1, 2007. Vessels with HMS angling, charter/headboat (CHB), or general category permits that participate in Atlantic billfish tournaments represent the universe of potentially affected vessels of alternative 1. Many Atlantic billfish tournaments and participants in the tournaments have prepared for and are implementing tournament rules that are consistent with the requirements of this rule.

Alternative 1 is expected to maintain tournament participation at current levels given the high rates of participation in catch and release fishing and the continued availability of fish for landing under this alternative. Economic costs to tournaments would likely be minimal as alternative 1 has been in place since January 1, 2007 and given the increase in the number of catch-and-release tournaments.

NMFS cannot predict angler behavior with regard to participation in tournaments, demand for CHB trips, or trips taken by individual anglers in reaction to potential circle hook requirements. As such, if any tournaments are cancelled, demand for CHB trips decreases, or trips taken by individual anglers decline as a result of circle hook requirements, there could be adverse impacts, that are unquantifiable at this time, depending on the size of the tournament or the number of CHB trips that may not be taken.

In the draft EA, NMFS stated that impacts of alternative 1 on hook manufactures, retailers, and anglers would likely continue to be limited given that J-hooks would continue to be permitted outside of tournaments and when using artificial lures in tournaments. During the public comment period, a commenter stated that a circle hook requirement in Central America and the circle hook requirement in Atlantic billfish tournaments in the U.S. that became effective January 1, 2007 caused the closing of a lure manufacturing business due to reduced lure sales. NMFS understands that there may be some negative economic impact as part of the previous rulemaking; however, based on continued high tournament registration rates, additional public comment that circle hooks can be rigged and used effectively with artificial lures/natural bait combinations, and the strong interest anglers have to learn to rig these lures effectively with circle hooks (as evidenced by popular articles on how to rig these tackle types), NMFS believes that the economic impacts to lure manufacturers and retailers is not likely to be large.

NMFS received anecdotal comment on a continuing basis leading the Agency to conclude that there may be loss of angler consumer surplus under the existing regulations due to the perception that J-hooks are more efficient at catching billfish than circle hooks. Alternative

1 may result in a long-term increase in angler consumer surplus should this alternative assist in the recovery of Atlantic marlin.

The economic impacts of alternative 2, the preferred alternative, on Atlantic billfish tournament anglers are anticipated to be minimal as the regulations requiring circle hook use by HMS permitted vessels in Atlantic billfish tournaments was implemented January 1, 2007. Alternative 2 would suspend these regulations through December 31, 2007 and provide for re-implementation on January 1, 2008. As previously discussed, NMFS cannot predict angler behavior with regard to participation in tournaments, demand for CHB trips, or trips taken by individual anglers in reaction to the potential suspension of circle hook requirements. The temporary suspension of the regulations should result in little economic impact for Atlantic billfish tournaments or participants as many of these have already prepared for and/or implemented tournament rules consistent with implementation of the rule requiring circle hook use in Atlantic billfish tournaments. There may be reduced costs to billfish tournament operators and participants that were not yet fully prepared to transition to circle hooks related to . Additionally, anglers are not required to fish with circle hooks outside of Atlantic billfish tournaments; therefore, temporary suspension of the circle hook requirement in tournaments represents an easing of restriction on anglers that requires no new gear purchase if angers wish to use J-hooks within tournament rules. As discussed for Alternative 1 above, there may be some negative economic impact associated with Alternative 2 on lure manufacturers and retailers. For the reasons discussed above, NMFS believes that the economic impacts to lure manufacturers and retailers is not likely to be large. Alternative 2 may also result in a temporary decrease or increase in angler consumer surplus. This is because, conversely to alternative 1 above, persons that may experience loss of angler consumer surplus under the existing regulations due to the perception that J-hooks are more efficient at catching billfish than circle hooks may experience gain in angler consumer surplus under alternative 2 in the short-term. Persons that support circle hook use in recreational billfish tournaments, such as those participating in tournaments that use only circle hooks, may experience loss of angler consumer surplus under alternative 2 in the short-term. Alternative 2 may result in a long-term increase in angler consumer surplus should this alternative assist in the recovery of Atlantic marlin.

7.0 REGULATORY IMPACT REVIEW

The RIR is conducted to comply with Executive Order 12866 (E.O. 12866) and provides analyses of the economic benefits and costs of each alternative to the nation and the fishery as a whole. Certain elements required in an RIR are also required as part of an EIS. Thus, this section should be considered only part of the RIR; the rest of the RIR can be found throughout this document.

7.1. Description of the Management Objectives

Please see Chapter 1 for a description of the management objectives associated with these management actions.

7.2. Description of the Fishery

Please see Chapter 3 of this document and the Consolidated HMS FMP for a detailed description of the fisheries that could be affected by this rulemaking.

7.3. Statement of the Problem

Please see Chapter 1 for a description of the problem and need for these management actions.

7.4. Description of Each Alternative

Please see Chapter 2 for a summary of each alternative and Chapter 4 for a complete description of each alternative and its expected ecological, social, and economic impacts. Chapter 6 and 8 provide additional information related to the impacts of the alternatives.

7.5. Economic Analysis of Expected Effects of Each Alternative Relative to the Baseline

NMFS does not believe that the national net benefits and costs would change significantly in the long run as a result of implementation of the preferred alternative compared to the baseline of no action.

The action considered in this document would provide additional time for recreational billfish tournament anglers to become more familiar and proficient with circle hooks and increase awareness among tournament anglers of circle hook conservation benefits. Table 7.1 indicates the possible net economic benefits and costs of each alternative.

Alternative 1, the no action/*Status Quo* alternative, would maintain the existing baseline, and thus little or no change would be anticipated if Alternative 1 were selected. Alternative 2, the preferred alternative would suspend the circle hook requirement for Atlantic billfish tournaments through December 31, 2007 and re-implement it on January 1, 2008. This could result in a small increase in tournament participation in the short-term based on the perception held by many anglers that they are more likely to catch a billfish on a J-hook than a circle hook. This final action would result in additional white marlin post-release mortalities during the period of 2007 that the requirement is suspended, but would strive to achieve improved white marlin post-release survival through improved compliance with the requirement in the long-term as compared to the baseline of no action. (Cost of rapid training vs. learning curve). As discussed in Section 4, based on existing studies indicating that hook type (circle hook vs. J-hook) is not a significant factor in catchability of Atlantic blue marlin (Prince *et. al*, 2002) as well as the comments from fishermen and tournament operators who have chosen to use circle hooks indicating that once they adjusted to circle hooks they preferred them over J-hooks because of a decrease in lost fish, NMFS is convinced that the concerns and preconceptions of anglers regarding the effectiveness of circle hooks for catching blue marlin and the resistance to using circle hooks stemming from these ideas and a lack of experience with circle hooks will be overcome if anglers are given more time to become familiar and proficient with them through an additional phase-in period. In the long-term, the preferred alternative may result in increased

angler consumer surplus by contributing to the recovery of Atlantic billfish and possibly increasing angler interactions with them as the species recovers.

7.6. Conclusion

Under E.O. 12866, a regulation is a "significant regulatory action" if it is likely to: (1) have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or state, local, or tribal governments or communities; (2) create a serious inconsistency or otherwise interfere with an action taken or planned by another agency; and (3) materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the legal mandates, the President's priorities, or the principles set forth in the Executive Order. The preferred alternative described in this document do not meet the above criteria. Therefore, under E.O. 12866, the preferred alternative described in this document have been determined to be not significant for the purposes of E.O. 12866. A summary of the expected net economic benefits and costs of each alternative, which are based on supporting text in Chapters 4 and 6, can be found in Table 7.1.

Table 7.1. Net Economic Benefits and Costs for each Alternative.

Alternatives	Net Economic Benefits	Net Economic Costs
Alternative 1 (No Action)	Long-term: Potential increased billfish abundance and possibly related benefit to angler consumer surplus from rebuilding efforts. Short-term: None.	Long-term: None Short-term: None
Alternative 2 (Preferred)	Long-term: Potential increased billfish abundance and possibly related benefit to angler consumer surplus from rebuilding efforts. Short-term: Potential limited increase in angler participation in tournaments given the perception of an improved ability to catch a billfish. Decreased costs to anglers to rapidly familiarize themselves with effective circle hook rigging and fishing techniques.	Long-term: None Short-term: Possible cost of some tournaments reprinting rules.

8.0 FINAL REGULATORY FLEXIBILITY ANALYSIS

The Final Regulatory Flexibility Analysis (FRFA) is conducted to comply with the Regulatory Flexibility Act (5 USC 601 et. seq.) and provides a description of the economic impacts of the various alternatives on small entities. Certain elements required in an FRFA are also required as part of an EA. Therefore, the FRFA incorporates the economic impacts identified in the EA.

8.1. Description of the Need For and Objectives of this Final Rule

Please see Chapter 1 for a description of the need and objectives for this final rule.

8.2. A Summary of the Significant Issues Raised by the Public Comments in Response to the Initial Regulatory Flexibility Analysis, 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

NMFS received several comments on the proposed rule and draft EA during the public comment period. A summary of these comments and the Agency's responses are included in the appendix and will be included in the final rule. NMFS did not receive any comments specific to the Initial Regulatory Flexibility Analysis (IRFA). During the public comment period, NMFS received an economic comment that a circle hook requirement in Central America and the circle hook requirement in Atlantic billfish tournaments in the U.S. that became effective January 1, 2007 caused the closing of a lure manufacturing business due to reduced lure sales. NMFS understands that there may be some negative economic impact as part of the previous rulemaking; however, based on continued high tournament registration rates, additional public comment that circle hooks can be rigged and used effectively with artificial lures/natural bait combinations, and the strong interest anglers have to learn to rig these lures effectively with circle hooks (as evidenced by popular articles on how to rig these tackle types), NMFS believes that the economic impacts to lure manufacturers and retailers is not likely to be large with this final action. No changes were made to this final action as a result of this comment.

8.3. Description and Estimate of the Number of Small Entities to Which the Final Rule Will Apply

NMFS considers all HMS commercial and charter/headboat permit holders to be small entities because they either had gross receipts less than $4.0 million for fish-harvesting, gross receipts less than $6.5 million for charter/headboats, or 100 or fewer employees for wholesale dealers. These are the SBA size standards for defining a small versus large business entity in these industries. A description of the fisheries affected and the categories and number of permit holders can be found in Chapter 6.

8.4. Description of the Projected Reporting, Record-keeping, and Other Compliance Requirements of the Final Rule, Including an Estimate of the Classes of Small Entities Which Will Be Subject to the Requirements of the Report or Record

None of the alternatives considered for this final rule would result in additional reporting, record-keeping, and compliance requirements that would require new Paperwork Reduction Act filings.

8.5. Description of the Steps the Agency Has Taken to Minimize the Significant Economic Impact on Small Entities Consistent with the Stated Objectives of Applicable Statutes, Including a Statement of the Factual, Policy, and Legal Reasons for Selecting the Alternative Adopted in the Final Rule and the Reason That Each One of the Other Significant Alternatives to the Rule Considered by the Agency Which Affect Small Entities Was Rejected

One of the requirements of a FRFA is to describe any alternatives to the final rule which accomplish the stated objectives and which minimize any significant economic impacts. These impacts are discussed below and in Chapters 4 and 6 of this document. NMFS believes that this final rule minimizes impacts on small entities by temporarily suspending circle hook requirements for HMS tournaments to allow participants additional time to become proficient in the use of circle hooks and familiar with their ecological benefits. The alternative to permanently suspend the circle hook requirement would not achieve MSA rebuilding objectives for these fisheries. As described below, NMFS considered three different alternatives for circle hook requirements in Atlantic billfish tournaments in this final rulemaking and provides justification for the selection of the preferred alternative to achieve the desired objective.

The alternatives considered were no action/*Status Quo* (alternative 1) which would leave in place the requirement for circle hook use in Atlantic billfish tournaments that was implemented on January 1, 2007, the preferred alternative (alternative 2) which would suspend the requirement for circle hook use in Atlantic billfish tournaments through December 31, 2007, and alternative 3 which would remove Atlantic billfish tournament circle hook requirements and promote voluntary use of circle hooks by tournament anglers. NMFS did not further analyze alternative 3 as it does not meet the objectives of the Magnuson-Stevens Act or the Consolidated HMS FMP even though it may reduce the economic impact of the preferred alternative on small entities. Because voluntary promotion in the years prior to implementation of the circle hook regulation on January 1, 2007, did not achieve a high percentage of recreational angler use of circle hooks in the Atlantic billfish fishery. As a result, NMFS does not anticipate that continued promotion of voluntary circle hook use alone by tournament anglers would result in achieving the maximum conservation benefit possible of reduced post-release mortality of Atlantic billfish relative to the no action alternative.

All of the alternatives are expected to be minimal in their impact to businesses. Alternative 2, could result in a minor short-term increase in billfish tournament participation, relative to alternative 1 (the No Action alternative) given the perceptions held by many anglers that J-hooks may increase the odds of landing a billfish. No additional costs for billfish tournament participants are likely because NMFS anticipates that anglers already possess J-hook related tackle, as this was the standard gear used in the fishery prior to January 1, 2007, and is still authorized for use outside of billfish tournaments. Alternative 2 may result in minor increases in printing and distribution costs to tournament operators if tournament rules need to be reprinted and redistributed. Tournaments could avoid additional printing costs if they voluntarily chose to maintain an all circle hook tournament format, which some tournaments have notified NMFS that they will do. Alternative 2 could have minor short-term positive impacts on the sales of fishing lures used in conjunction with natural baits by temporarily allowing anglers to utilize J-hooks. There may be a long-term increase to angler consumer surplus from rebuilding efforts

through either alternatives 1 or 2, and therefore potentially increase demand for billfish tournament participation. However, these may be realized sooner under alternative 2 should it lead to increased acceptance and use of circle hooks. Alternatives 1 and 2 would assist in addressing overfishing as per the objectives of the Magnusson-Stevens Act and the Consolidated HMS FMP for Atlantic billfish by decreasing mortality. However, it is expected that long-term compliance with the regulation will be improved under alternative 2, for the reasons previously discussed in this document. For additional detail as to how the preferred action alternative meets Magnusson-Stevens Act requirements, please refer to Section 10.1.

9.0 COMMUNITY PROFILES

This chapter serves as a brief overview and determination of the social impacts associated with the final regulation. A more comprehensive review of community profiles for all HMS fisheries can be found in Section 9 of the Consolidated HMS FMP.

9.1. Introduction

Mandates to conduct social impact assessments come from both the NEPA and the Magnuson-Stevens Act. NEPA requires federal agencies to consider the interactions of natural and human environments by using a "systematic, interdisciplinary approach, which would ensure the integrated use of the natural and social sciences...in planning and decision-making" (§102(2)(A)). Moreover, agencies need to address the aesthetic, historic, cultural, economic, social, or health effects, which may be direct, indirect, or cumulative. 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 these actions need to be examined in order to mitigate the negative impacts experienced by the populations concerned.

Social impacts are generally the consequences to human populations that follow from some type of public or private action. They may include alterations to the ways people live, work or play, relate to one another, and organize to meet their needs. In addition, cultural impacts, which may involve changes in values and beliefs that affect people's way of identifying themselves within their occupation, communities, and society in general, are included under this interpretation. Social impacts analyses help determine the consequences of policy action in advance by comparing the status quo with the projected impacts. Although public hearings and scoping meetings provide input from those concerned with a particular action, they do not constitute a full overview of the affected constituents. A summary of potential social impacts to Atlantic and Gulf of Mexico coastal states resulting from the alternatives is presented in Section 4 of this document.

9.2. State and Community Profiles

Section 9.4 of the Consolidated HMS FMP provides a comprehensive summary of the states and communities that participate in HMS fisheries and are affected by HMS regulations.

10.0 OTHER CONSIDERATIONS

10.1. National Standards

The analyses in this document are consistent with the National Standards (NS) set forth in the 50 CFR part 600 regulations. The October 2006 SCRS report stated that recent biomass levels for both white and blue marlin remain well below the biomass level at maximum sustainable yield and fishing mortality in 2004 possibly exceeded and exceeded that fishing mortality threshold for maximum sustainable yield for white marlin and blue marlin respectively. These indices show that the Consolidated HMS FMP objective to reduce post-release hooking mortality through strategies such as circle hook use in tournaments remains valid and necessary. This preferred alternative is consistent with NS 1 in that it would assist in addressing overfishing of Atlantic billfish by decreasing fishing mortality by improving long-term compliance with billfish tournament circle hook requirements upon their reinstatement. Because the alternatives are based on the results of the 2006 ICCAT SCRS stock assessment, the alternatives considered are based on the best scientific information available (NS 2), including self-reported, observer, and stock assessment data which provide for the management of the species throughout its ranges (NS 3). The preferred alternative does not discriminate against fishermen in any state (NS 4) as the regulations apply to all areas under management nor do they alter the efficiency in utilizing the resource (NS 5). With regard to NS 6, the preferred alternative takes into account any variations that may occur in the fishery and the fishery resources. Additionally, NMFS considered the costs and benefits of these management measures economically and socially under NS 7 and 8 in sections 4, 6, 7, 8, and 9 of this document. The preferred alternative seeks, in the long-term, to minimize the mortality of released fish and other species with which participants in the Atlantic billfish tournament fisheries interact, including protected species (NS 9). Finally, preferred alternative would not require fishermen to fish in an unsafe manner (NS 10).

10.2. Paperwork Reduction Act

This action does not contain any new collection-of-information requirements for purposes of the Paperwork Reduction Act.

10.3. Federalism

This action does not contain regulatory provisions with federalism implications sufficient to warrant preparation of a Federalism Assessment under E.O. 13132.

11.0 LIST OF PREPARERS

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12.0 LIST OF AGENCIES AND PERSONS CONSULTED

Discussions pertinent to the formulation of the final actions involved input from the various staff within the NMFS and NOAA, including the NOAA General Counsel for Fisheries, General Counsel for Enforcement and the Southeast Fisheries Science Center.

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APPENDIX A

Comments on Proposed Rule to Suspend Circle Hook Regulation

Comment 1: Several commenters in favor of Alternative 1, the no action alternative (status quo), stated that the existing measure is necessary to protect Atlantic white marlin stocks and promote rebuilding. Similarly other commenters felt that maintaining the circle hook requirement would be beneficial in reducing the likelihood of listing white marlin as endangered or threatened under the Endangered Species Act.

Response: NMFS agrees that maintaining the circle hook requirement would continue to provide post-release hooking mortality benefits; however, given the short duration of the circle hook suspension, NMFS projects that it will result in a one-time limited number of additional white marlin post-release mortalities that would not adversely affect the Atlantic wide stock in a measurable way. NMFS believes that the provision of an additional phase-in period during which anglers can become more proficient, comfortable, and accepting of circle hooks will, in the long-term, offset the short-term increase in mortalities by resulting in greater long-term compliance with circle hook regulations. The white marlin listing review, conducted under the Endangered Species Act, is currently underway. The biological review team conducting the review may consider the impacts of all fishery management measures in effect including circle hook requirements when making its recommendations. NMFS cannot predict the outcome of the review team's deliberations or the direct impact that any particular regulation may have on the outcome of such deliberations.

Comment 2: NMFS received comment in support of Alternative 1, the no action alternative (status quo), because commenters felt there are many different ways of rigging baits with circle hooks that have been tested and proven to work.

Response: NMFS received similar comment during and following development of the circle hook requirement from anglers stating that successful methods of rigging baits with circle hooks exist and are practiced. NMFS agrees that appropriate rigging techniques for circle hooks exist which allow anglers to successfully catch Atlantic billfish. Further, Prince et al. 2002, found no statistical difference between catch rates between circle hooks and J-hooks using both natural dead bait trolling and live bait drifting/kite fishing techniques. Additionally, several popular articles have been published in major sportfishing magazines that highlight some of these methods. However, NMFS believes that an improved long-term ecological benefit can be achieved by allowing an additional phase-in period for the reasons discussed in the response to Comment 1.

Comment 3: The Maryland Department of Natural Resources (MDNR) expressed support for alternative 1, the no action alternative (status quo). MDNR cited its work with the recreational fishing community and the billfish tournament directors in Maryland to educate anglers regarding the conservation benefits of circle hook use and stated that the major billfish tournaments in Maryland anticipated the circle hook requirement and prepared for it. MDNR cited success with implementation of circle hook requirements in Maryland's special catch and

release fishery for striped bass in the Chesapeake Bay and stated that suspending the circle hook requirement for Atlantic billfish tournaments would send the wrong message to recreational anglers.

Response: NMFS appreciates the conservation efforts of the MDNR. The suspension of the circle hook requirement in Atlantic billfish tournaments is a temporary measure with the purpose of providing additional time for anglers to become more familiar with techniques for rigging and fishing with circle hooks in Atlantic billfish tournaments, thus resulting in improved long-term compliance with the circle hook requirement upon reimplementation. NMFS has worked to increase awareness among anglers of the benefits of circle hooks and will continue to do so during and following the temporary suspension.

Comment 4: NMFS received comment in support of alternative 1, the no action alternative (status quo), because of the lack of time for tournament operators to get the word to all potential participants about what gear is allowed. Alternatively, NMFS received comment in support of the preferred alternative so that tournament rules would not have to be rewritten this year as some tournaments may have published their rules using 2006 regulations.

Response: NMFS received comment from multiple tournament operators indicating that some tournaments prepared for the circle hook requirement when it was implemented on January 1, 2007, while others were unaware or did not prepare. NMFS appreciates the concerns of tournament operators and anglers regarding the need to know what gear configurations are available for use in advance. NMFS also appreciates those constituents that were aware of and prepared for the requirement and regrets that tournament rules may need to be reprinted as a result of the temporary suspension of the regulation. NMFS also points out that tournaments in some areas of the Atlantic and Gulf of Mexico have voluntarily implemented circle hook requirements in recent years and the temporary suspension of the requirement does not prevent this. NMFS encourages anglers and tournament operators to stay informed of HMS management issues and actions by visiting http://www.nmfs.noaa.gov/sfa/hms/ and signing up for the electronic bulletin, *Atlantic HMS News*.

Comment 5: NMFS received comment in support of the preferred alternative, temporarily suspend the Atlantic billfish circle hook requirement, that expressed a desire for NMFS to use the suspension period to accomplish several tasks. These suggestions include: improve the circle hook definition; investigate the availability of circle hooks for the recreational billfishing tackle market; investigate the post-release hooking mortality rates of J-hook and circle hook rigged natural and natural bait/artificial lure combination baits trolled at high speed such as is used frequently when targeting blue marlin; investigate the possibility of a minimum size J-hook that could be allowed when high speed trolling for blue marlin; investigate post-release mortality of billfish when lures with double hooks are used; investigate how the circle hook requirement affects tournaments with mixed target species; investigate whether the circle hook requirement would accomplish its intended objective or not; and investigate post-release hooking mortality differences between different presentations of J-hooks with live baits.

Response: NMFS agrees that information from studies such as some of those mentioned during public comment may be useful for refining management of the billfish fishery in the

future as additional data become available. NMFS is working on a number of these issues including improving the definition of circle hooks and the potential for additional post-release mortality studies examining various gear and technique configurations.

Comment 6: NMFS received comment in favor of the preferred alternative, temporarily suspend the Atlantic billfish circle hook requirement; however, commenters expressed a desire for modifications to the circle hook requirement upon re-implementation. Commenters indicated that these modifications are popular for use when targeting blue marlin and are less damaging to all billfish than J-hooks used with live or dead natural baits on light tackle. Some commenters making this suggestion stated that some of these modifications would help reduce the impact to anglers fishing in mixed species tournaments. Some commenters stated that these modifications would allow the continuation of North Carolina's historic and traditional method of fishing for blue marlin using heavy tackle and/or lure/bait combinations rigged with J-hooks and trolled at high speed. Suggested modifications included creating an exemption to the circle hook requirement to allow J-hook use with heavy tackle and/or lure/bait combinations trolled at high speed and creating an exemption to the circle hook requirement to allow J-hook use if the main line is less than 50 lb. test, less than 80 lb. test, leader size is less then 200 lb. test, hook is at least a certain size that cannot be swallowed easily by a billfish (hook size suggestions were 9/0, 10/0, 11/0 and 12/0), or some combination of these criteria.

Response: NMFS acknowledges that limited information from the few blue marlin tagged with pop-off satellite archival tags (PSATs) (9 fish) in the study by Graves et al. (2001) shows relatively low rates of post-release mortality for blue marlin caught on J-hooks when certain gear configurations and techniques are employed. However, the sample size of this one study is limited and no information exists on the impacts of combination baits with J-hooks on white marlin and other billfish species. NMFS implemented the regulations requiring circle hooks on natural baits and natural bait/artificial lure combinations based on a number of considerations that are detailed in the Final Environmental Impact Statement (FEIS) for the Consolidated HMS FMP. The basis for that decision included, but was not limited to: the post-release survival benefits of circle hooks for billfish and many other species identified in a number studies, comparable catch rates of billfish between circle hooks and J-hooks identified in available studies, the poor stock status of some Atlantic billfish species, the limited amount of available data on various gear configurations, and enforcement issues. NMFS will consider new information on the effects of the fishing methods mentioned above on fish condition and post-release mortality as it becomes available. NMFS acknowledges that the circle hook requirement in Atlantic billfish tournaments may have impacts on secondary fisheries including wahoo, king mackerel, dolphin, tunas, and other fisheries and has limited these impacts to the extent feasible in the creation of the circle hook requirement by applying it narrowly to only HMS permitted vessels participating in tournaments with award categories for Atlantic billfish. NMFS will consider new information on ways to limit impacts of HMS requirements on non-HMS fisheries as it becomes available. NMFS acknowledges that a traditional recreational fishery exists for blue marlin in the Atlantic and Gulf of Mexico that utilizes different fishing techniques in different locations and situations. The fishing technique of using heavy tackle and/or lure/bait combinations rigged with J-hooks and trolled at high speed is used in several locations throughout the Atlantic and Gulf of Mexico. The fishery management strategy employed to reduce post-release hooking mortality of Atlantic billfish through the circle hook requirement in

Atlantic billfish tournaments is a modification of the techniques used in this fishery. NMFS received public comment during and following development of the circle hook requirement from anglers that successful methods of rigging baits with circle hooks exist and are practiced. Additionally, several articles have been published in major sportfishing magazines that highlight some of these methods. NMFS believes that through this and other fishery management strategies, the traditional recreational fishery for blue marlin and other Atlantic billfish may be improved by promoting stock rebuilding.

Comment 7: NMFS received comment from the North Carolina Division of Marine Fisheries (NCDMF) indicating their support for the preferred alternative, temporarily suspend the Atlantic billfish circle hook requirement. NCDMF stated that the current rule may negatively impact angler's ability to catch blue marlin. Concern was expressed over the impacts of mandating circle hook use for natural baits and natural bait/combinations for all tackle sizes. NCDMF encouraged NMFS to explore the circle hook definition, conduct research on release mortality of billfish released on heavy tackle with J-hooks, research the difference in catch rates of circle and J-hooks for non-billfish species targeted in tournaments, and explore recently raised questions concerning post-release mortality of billfish caught on double hooked lures. NCDMF expressed concern that a shortage of large non-offset circle hooks to supply the billfish fishery may exist.

Response: NMFS appreciates the comments of the NCDMF. The purpose of the temporary suspension of the circle hook requirement in Atlantic billfish tournaments is to allow additional time for anglers to become more familiar with techniques for rigging and fishing with circle hooks in Atlantic billfish tournaments, thus resulting in improved long-term compliance with the requirement upon reimplementation. As discussed in the response to Comment 6, NMFS received comment during and following development of the circle hook requirement from anglers stating that successful methods of rigging baits with circle hooks exist and are practiced. Additionally, several articles have been published in major sportfishing magazines that highlight some of these methods.
Regarding the application of the circle hook requirement for all tackle sizes, NMFS developed the requirement with consideration for several different concerns which included application to the targeted fishery and the ease of enforcement, as well as other considerations identified in the response to Comment 6 and discussed in detail in the FEIS for the Consolidated HMS FMP. NMFS believes that the requirements for the use of circle hooks by permitted HMS fishermen when natural bait and natural bait/artificial lures are deployed in billfish tournaments improve its enforceability. Related to application of the requirement to all tackle sizes and researching post-release mortality for various tackle types, NMFS will consider new information on the effects of the fishing methods on fish condition and post-release hooking mortality, as it becomes available. NMFS has not received information indicating that a shortage of large non-offset circle hooks exists other than that contained in NCDMF's comment. The circle hook requirement was finalized in October 2006 and became effective January 1, 2007, providing time for circle hook manufacturers and retail stores to increase inventory. The Atlantic billfish tournament season is protracted and peaks in the late spring and summer months, thereby providing additional time for manufacturers and retailers to prepare for demand. The preferred alternative to temporarily suspend the circle hook requirement in Atlantic billfish tournaments may dampen the peak in demand for circle hooks in 2007 as anglers will not be required to use

circle hooks, but may still desire to practice with them in preparation for re-implementation of the requirement on January 1, 2008. However, as mentioned, NMFS has received no information from anglers, distributors, tackle shops, tournament operators, or manufacturers that a real or potential shortage of hooks exists.

Comment 8: NMFS received comment in favor of non-preferred alternative 3, remove Atlantic billfish tournament circle hook requirements, for various reasons including: insufficient data to implement a circle hook requirement in billfish tournaments; voluntary use of circle hooks should continue to be encouraged; fear that similar requirements will be imposed in all offshore trolling for any species to reduce billfish post-release mortality; concerns that circle hooks lodging in the corner of the jaw actually are the most painful and cause long-term damage to the fish resulting in a decreased ability of the fish to feed and increased rates of death relative to billfish caught with J-hooks.

Response: NMFS disagrees that there is insufficient data to implement a circle hook requirement in billfish tournaments. NMFS has relied on publicly available peer-reviewed scientific papers and available recreational data sets in developing its analyses. The assumptions made to support the use of circle hooks are clearly articulated in Chapter 4 of the Consolidated HMS FMP. NMFS agrees that voluntary circle hook use in HMS fisheries outside of Atlantic billfish tournaments should be encouraged. Voluntary use of circle hooks was promoted in the years prior to implementation of the circle hook regulation on January 1, 2007; however, this voluntary promotion only achieved limited success in transitioning recreational anglers to circle hooks in the Atlantic billfish fishery. NMFS does not anticipate that continued promotion of voluntary circle hook use alone by tournament anglers would result in achieving the maximum conservation benefit possible of reduced post-release mortality of Atlantic billfish relative to the no action alternative. NMFS acknowledges that requiring circle hooks in all HMS fisheries could have impacts on secondary fisheries, including tunas, sharks, dolphin, wahoo, king mackerel, etc., and other inshore fisheries and has taken steps to minimize these impacts, as discussed under the response to comment 6. NMFS disagrees that circle hooks lodging in the corner of the jaw are more damaging to fish in the long-term and result in fish death more frequently than with J-hooks. This comment is not supported by peer reviewed scientific literature showing lower post-release mortality of white marlin when caught with circle hooks in comparison with J-hooks and showing less damaging hook location in sailfish and blue marlin when caught with circle hooks in comparison with J-hooks.

Comment 9: NMFS received comment from lure manufacturers stating that rigging circle hooks with hard headed artificial lures and natural baits is an ineffective method of catching billfish and has resulted in substantial loss of lure sales. One manufacturer stated that the combined economic impact from Central American circle hook requirements and the domestic circle hook requirement implemented in January 2007, the requirement was large enough to cause his company to go out of business. Similarly, another lure manufacturer stated that hard headed lures with nylon skirts are designed to be trolled at high speed in conjunction with natural baits and J-hooks resulting in almost all fish being hooked in the mouth. One manufacturer expressed support for alternative 3, removal of Atlantic billfish tournament circle hook requirements, and another requested that NMFS further investigate an exemption for artificial lure/natural bait combinations rigged with J-hooks and trolled at high speed.

Response: NMFS appreciates the comment that economic impacts may have occurred as a result of previous rulemaking to implement the circle hook requirement on January 1, 2007. As discussed in the response to Comment 6, NMFS received comment during and following development of the circle hook requirement from anglers stating that successful methods of rigging baits with circle hooks exist and are practiced. Additionally, several articles have been published in major sportfishing magazines that highlight some of these methods including methods to rig and fish with hard headed lures with nylon skirts used in combination with natural baits. NMFS acknowledges that investigating questions about certain gear and rigging types such as that mentioned above may provide additional useful information in the future and will consider these issues when identifying future research priorities.

Comment 10: NMFS received comment that no data exists to support application of the circle hook requirement to blue marlin fishing methods that employ circle hook rigged baits trolled at high speed. These comments stated that the damage to billfish when J-hooks are used in baits trolled at high speed is less than when J-hooks are used with dead or live natural baits on light tackle. These comments also stated that no data exists to support the concept of the circle hook requirement that large baits, lures, or artificial/natural combination baits rigged with circle hooks and trolled at high speed result in an adequate hook-up rate.

Response: As discussed in the response to Comment 6, NMFS developed the circle hook requirement in Atlantic billfish tournaments with consideration for several different concerns, including but not limited to: the post-release survival benefits of circle hooks for multiple billfish species and other species identified in a several studies, comparable catch rates of various billfishes between circle hooks and J-hooks as identified in available studies, the poor stock status of some Atlantic billfish species, and enforcement issues. Accordingly, the rule applies to natural and natural/artificial combination baits. NMFS acknowledges that limited information from the few blue marlin tagged with PSATs (9 fish) in the study by Graves et al. (2001) shows relatively low rates of post-release mortality for blue marlin caught on J-hooks when certain gear configurations and techniques are employed. No information exists, however, on the impacts of this fishing technique on white marlin and other billfish species. With this uncertainty of impacts in particular to white marlin, the regulation was developed in a manner to provide additional protection to severely overfished Atlantic billfishes. NMFS will consider new information on the effects of the fishing methods mentioned above on fish condition and post-release hooking mortality, as it becomes available. As discussed in the response to Comment 6, NMFS received comment during and following development of the circle hook requirement from anglers that successful methods of rigging baits with circle hooks exist and are practiced. Additionally, several articles have been published in major sportfishing magazines that highlight some of these methods including methods to rig and fish with hard headed lures with nylon skirts used in combination with natural baits.

Comment 11: NMFS received comment suggesting that fees be assessed on all HMS recreational permits and HMS registered tournaments to fund PSAT tagging for post- release mortality comparisons between circle hooks and J-hooks.

Response: NMFS appreciates the suggestion as funding for continued post-release mortality studies in Atlantic billfish fisheries is needed. Suggestions for research funding will be considered as future research needs are assessed.

Comment 12: NMFS received comment that the existing circle hook requirement is not compatible with mixed species tournaments and will reduce the ability of anglers to catch wahoo, dolphin, tuna, and others.

Response: NMFS understands that the circle hook requirement in Atlantic billfish tournaments will affect anglers in HMS permitted vessels targeting species other than Atlantic billfish. Many pelagic fish species are found in the same areas as Atlantic billfish and feed on similar prey. Atlantic billfish may be caught in many areas using the same fishing methods employed for other pelagic species such as wahoo, dolphin, tuna, king mackerel, and others; therefore, circle hooks are necessary in that portion of the tournament fishery. NMFS sought to minimize the impacts on secondary species by limiting the applicability of circle hook regulations as discussed in the response to Comment 6.

Comment 13: NMFS received comment that the existing circle hook requirement is not enforceable and relies on tournament operators as the only enforcement agent. NMFS also received public comment that the circle hook requirement would be enforceable.

Response: The requirements for the use of circle hooks by permitted HMS fishermen when natural bait and natural bait/artificial lures are deployed in billfish tournaments can be adequately enforced by NOAA Enforcement and the United States Coast Guard. As most tournaments rules require anglers to comply with all applicable state and federal regulations, NMFS believes that an important incentive for anglers to comply with regulations is the potential to have a prize-winning fish disqualified for not deploying a circle hook when required.

Comment 14: NMFS received comment that all fishing tournaments should be banned.

Response: NMFS disagrees. Atlantic HMS tournaments represent an important component of a robust recreational fishery and provide substantial socio-economic benefits to many communities. Further, tournaments represent an essential mechanism for obtaining significant amounts of data on many species that are incorporated into fish population assessments and management decisions.

Comment 15: NMFS received comment that tournaments are venues that could provide a large number of interactions with marlin and should be used to collect data to answer the post-release hooking mortality questions for blue and white marlin.

Response: NMFS appreciates the interest in collecting post-release hooking mortality information and agrees that tournaments can provide, for some fishery management issues, a venue for collecting fisheries information via appropriately designed data collection protocols. Such situations have been and continue to be valuable for collecting billfish information such as through the Recreational Billfish Survey and other life history studies. Such activity is not affected by this rulemaking.

Comment 16: NMFS received comment that the recreational fishing mortality level for billfish does not compare to the much larger pelagic longline mortality level thus the circle hook requirement in Atlantic billfish tournaments is directed at the wrong mortality source.

Response: The United States is responsible for approximately 4.5 percent of reported white marlin catches in the Atlantic. As explained in Appendix C of the 2006 Consolidated HMS FMP, average annual fishing mortality levels imposed by the domestic pelagic longline fishery and the recreational tournament fishery on Atlantic white marlin are roughly comparable. Based on pelagic longline logbook data and data from the Recreational Billfish Survey, the level of billfish mortality imposed by U.S. recreational billfish tournament fishermen is estimated to be approximately 71% of levels imposed by the U.S. pelagic longline fishery. While the post-release mortality rate of Atlantic white marlin is estimated to be lower in recreational fisheries than in the pelagic longline fishery, the size of the recreational tournament fishery is large enough to generally offset the difference in mortality rates.

Comment 17: NMFS received several comments that the preferred alternative, suspend Atlantic billfish tournament circle hook requirements through the close of 2007, is not favorable. These include: the proposed rule is not precautionary; compliance with the already established rule would be 100 percent; the proposed rule is not supported by the record; there is a lack of parity with this proposed rule as an extended phase-in period is proposed for recreational anglers, but there was no grace period for commercial fishermen when circle hooks were required; the timing of proposed rule is bad as tournaments are in May and June and anglers should be practicing with circle hooks already.

Response: NMFS appreciates the comment that temporary suspension of the circle hook rule is not precautionary and that compliance would be 100 percent. NMFS disagrees that temporary suspension of the circle hook requirement is not supported by the record as the rule will be re-implemented January 1, 2008. NMFS agrees that maintaining the circle hook requirement would continue to provide post-release hooking mortality benefits; however, given the short duration of the circle hook suspension, NMFS projects that it will result in a one-time limited number of additional white marlin post-release mortalities that would not affect the Atlantic wide stock in a measurable way. NMFS believes that the provision of an additional phase-in period during which anglers can become more proficient, comfortable, and accepting of circle hooks will, in the long-term, offset the short-term increase in mortalities by resulting in greater long-term compliance with circle hook regulations. NMFS disagrees that there is a lack of parity between implementation of the circle hook requirement in Atlantic billfish tournaments and the circle hook requirement for the pelagic longline (PLL) fishery because the basis for the two actions are different. The circle hook requirement in Atlantic billfish tournaments is a domestic measure intended to aid in rebuilding Atlantic billfish stocks by reducing post-release fishing mortality to the extent practicable at this time. The circle hook requirement in the Atlantic PLL fishery responds to issuance of the 2004 Biological Opinion which determined that continued operation of the pelagic longline fishery without changes in fishing gears or techniques would jeopardize the existence of leatherback sea turtles. Per the Endangered Species Act, the Agency was required to implement changes in the way the pelagic longline operated. Rapid implementation of the circle hook requirement for PLL was necessary for the fishery to

continue operating. This rulemaking is intended to reduce post-release mortality of Atlantic billfish in the long-term by temporarily suspending the circle hook requirement in Atlantic billfish tournaments to allow tournaments and tournament anglers additional time to become more familiar with techniques for rigging and fishing with circle hooks.

Comment 18: NMFS received comment that circle hook specifications should be defined and field tested. Commenters also stated that circle hook rigging workshops should be held or videos should be developed. NMFS also received comment that 3 different circle hooks were used in recent research and all 3 worked well in reducing post-release mortality even with differences in their general design. Additionally, comment was received that it is important to stay consistent with what the international community is using as a definition of circle hooks because of tackle manufacturing and to reduce confusion.

Response: NMFS appreciates the numerous comments received about circle hook definition issues and is involved in discussions with hook manufacturers and gear experts to address many of these concerns. Further, NMFS is not aware of an internationally accepted definition of circle hooks. The Agency may consider this issue in future rulemaking, as appropriate.

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Drafted by R. Blankinship	3/13/2007
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Edited by R. Dunn for G. Silva	4/17/2007
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Edited by R. Dunn for GCF (F. Sprtel)	4/23/2007
Edited by R. Blankinship (T. Adams)	4/24/2007
Edited by R. Blankinship for R. Dunn (T. Adams)	4/25/2007
Edited by R. Blankinship	5/1/2007
Edited by R. Blankinship per DOC	5/7/2007