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**MSC Final Report**  
*for*  
**US North Atlantic Swordfish**  
**Pelagic Longline and Handgear Buoy Line Fishery**

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**MRAG Americas, Inc.**

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March 01 2013

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MSC Accreditation Manual Version 5  
MSC Certification Requirements (CR) Version 1.2  
MSC Chain of Custody Certification Methodology (CoC CM) Version 7

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## List of Acronyms

AP	Advisory Panel (NMFS)
ASPIC	A Stock Production Model Incorporating Covariates
ATCA	Atlantic Tunas Convention Act
B	Biomass
$B_{MSY}$	Biomass at Maximum Sustainable Yield
BA	Biological Assessment (NOAA)
BFT	Bluefin Tuna
BiOp	Biological Opinion (NOAA)
CCAMLR	Convention on the Conservation of Antarctic Marine Living Resources
CITES	Convention on International Trade in Endangered Species
CMS	Convention on Migratory Species
CoC	Chain of Custody certification
COFI	FAO Committee on Fisheries
CPC	ICCAT Contracting Party, Cooperating non-Contracting Party, Entity or Fishing Entity
CPUE	Catch Per Unit of Effort
CTC	Cooperative Tagging Center (SEFSC)
CZMA	Coastal Zone Management Act (US)
DLS	Dealer Logbook System
DOS	Department of State (US)
EBM	Ecosystem Based Management
EC	European Community
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
EPAP	Ecosystem Principles Advisory Panel (of NMFS)
ESA	Endangered Species Act
ETP	Endangered, Threatened or Protected (species)
EU	European Union
F	Fishing mortality rate
$F_{MSY}$	Fishing mortality rate at Maximum Sustainable Yield
FAO	Food and Agriculture Organisation of the United Nations
FAM	Fisheries Assessment Methodology (MSC)
FCM	Fisheries Certification Methodology (MSC)
FEC	Florida East-Coast
FEP	Fisheries Ecosystem Plan
FiB	Fishing in Balance index
FLS	Fisheries Logbook Systems
FMP	Fisheries Management Plan
GOM	Gulf of Mexico
HCR	Harvest Control Rule
HMS	Highly Migratory Species
IAC	Inter-American Convention for the Protection and Conservation of Sea Turtles
IATTC	Inter-American Tropical Tuna Commission
ICCAT	International Commission for the Conservation of Atlantic Tunas
IERPBF	ICCAT Enhanced Research Programme for Billfish

IMO	International Maritime Organization
IOSEA	Indian Ocean and South-east Asia
IPOA-S	International Plan of Action for Reducing the Incidental Catch of Seabirds in Longline Fisheries
ISWG	Interagency Seabird Working Group
IT	Incidental Take
ITS	Incidental Take Statement (NOAA)
IUCN	International Union for the Conservation of Nature
IUU	Illegal, Unregulated and Unreported
LCS	Large Coastal Shark
LJFL	Lower jaw fork length
LME	Large Marine Ecosystem
LOF	List of Fisheries (NOAA)
LRP	Limit Reference Point
MAMFC	Mid-Atlantic Fishery Management Council
MBTA	Migratory Bird Treaty Act
MFAD	Anchored Fish Aggregating Device
MFMT	Maximum Fishing Mortality Threshold
ML	Maximum Length
MMPA	Marine Mammal Protection Act
MSC	Marine Stewardship Council
MSFCMA	Magnuson-Stevens Fishery Conservation and Management Act (US)
MSST	Minimum Stock Size Threshold
MSY	Maximum Sustainable Yield
MTI	Mean Trophic Index
NAFO	North Atlantic Fisheries Organisation
NAT	North Atlantic swordfish
NED	Northeast Distant
NEPA	National Environment Protection Act (US)
NMFS	National Marine Fisheries Service (of NOAA)
NOAA	National Oceanic and Atmospheric Administration
NS	National Standards (MSFCMA)
NSGs	National Standard Guidelines (NMFS)
NWGB	National Working Group on Bycatch (NMFS)
OLE	Office for Law Enforcement (NOAA)
PI	Performance Indicator (MSC)
PLL	Pelagic Longline
PLTRT	Pelagic Longline Take Reduction Team (NMFS)
POP	Pelagic Observer Program (NMFS)
PS	Pelagic shark
PSA	Productivity Susceptibility Analysis
RBF	Risk Based Framework (MSC)
RFM	Regional Fishery Management
RFMO	Regional Fisheries Management Organisation
RPM	Reasonable and Prudent Measures (NOAA)
SAFE	Stock Assessment and Fishery Evaluation report (NMFS)
SCRS	ICCAT Standing Committee for Research and Statistics
SDP	Statistical Document Program
SEDAR	Southeast Data, Assessment and Review (of SEFSC)

SEFSC	Southeast Fisheries Science Center (of NMFS)
SERO-PRO	Southeast Regional Office Protected Resources Division
SICA	Scale Intensity Consequence Analysis
SMC	Small coastal shark
SPAW	Specially Protected Areas and Wildlife (UNEP)
SPM	Surplus Production Model
SSB	Spawning Stock Biomass
SSF	Spawning Stock Fecundity
SSN	Spawning Stock Number
STACFAD	Standing Committee on Finance and Administration (ICCAT)
SWO-ATL	Atlantic Swordfish
TAC	Total Allowable Catch
TRP	Take Reduction Plan
UN	United Nations
UNEP	United Nations Environment Programme
UNFSA	United Nations Fish Stocks Agreement
UoC	Unit of Certification (MSC)
US	United States of America
USFWS	United States Fish and Wildlife Service
USVI	United States Virgin Islands
VMS	Vessel Monitoring System
VPA	Virtual Population Analysis
WG-FSA	Working Group on Fish Stock Assessment (CCAMLR)
ZMRG	Zero Mortality Rate Goal

# 1 Executive Summary

The assessment team consisted of Graeme Parkes, MRAG Americas; Rebecca Mitchell, MRAG Ltd., and Robert J. Trumble, MRAG Americas.<sup>1</sup> John Musick and John Mark Dean conducted the peer reviews.

This report sets out the draft results of the assessment of the North Atlantic U.S. Swordfish Pelagic Longline and Headgear Buoy Line Fishery carried out by MRAG Americas, Inc. against the Marine Stewardship Council (MSC) Principles and Criteria for Sustainable Fishing. The purpose of this report is to provide background information, evaluation of the fishery, and justification for scoring the performance indicators provided by the MSC in the generic assessment tree of the Certification Requirements version 1.2. MRAG conducted no primary research as part of this assessment, and relied on existing information to conduct the analysis. The report intends to clearly set out key issues for consideration during annual surveillance audits and for subsequent recertification.

The record of document amendments is provided in Table 1.

Table 1 Document Amendment Record

Version	Start	End
Client Draft	May 2012	December 2012
Peer review draft	December 2012	December 2012
Public Comment draft	January 2013	January 2013
Final Report and Determination	February 2013	March 2013
Certification Report		

The MSC Guidelines to Certifiers specify that the unit of certification is "The fishery or fish stock (=biologically distinct unit) combined with the fishing method/gear and practice (=vessel(s) pursuing the fish of that stock) and management framework."

This report provides details of the MSC assessment process for the North Atlantic U.S. Swordfish Pelagic Longline and Handgear Buoy Line Fishery. The assessment process began in April 2012 and has reached the Client Review stage in October 2012. The Unit of Certification of this assessment is the US harvest of North Atlantic Broadbill Swordfish (*Xiphias Gladius*) in the geographical area of the US East Coast, captured by pelagic longline and handgear buoy line. The geographical area of the US East Coast here includes the NMFS statistical areas of the Florida East Coast (FEC), South Atlantic Bight (SAB), Mid-Atlantic Bight (MAB), Sargasso Sea (SAR), Northeast Coastal (NEC), North East Distant (NED), and North Central Atlantic (NCA). This assessment specifically excludes the Caribbean (CAR) and the Gulf of Mexico (GOM).

<sup>1</sup> A significant amount of material for this assessment was derived from the previous assessment of the Florida East Coast (FEC) portion of the fishery, also undertaken by MRAG Americas. The assessment Team would like to acknowledge the valuable contribution make to that assessment, and by reference to this assessment by Dr Joseph Powers, professor of stock assessment in the School of the Coast and Environment, Louisiana State University.



This assessment follows on from a separate but related assessment that resulted in the certification of the Southeast US North Atlantic swordfish fishery within the FEC in December 2011. This assessment is for the same gears, but across a significantly expanded geographic range. This is the principle difference between the previous assessment and this one. If this new assessment results in a Certification, this Certification will subsume the existing one.

This assessment draws substantially on the results of the analysis of performance indicators under Principle 1 (P1) and Principle 3 (P3) from the prior (FEC) assessment, citing updates to the information where available. Scores for the PIs under P1 and P3 will be changed from the previously allocated scores only where there is clear justification for doing so, either due to new information since the time of the prior assessment, or as a result of the expansion of scope that may result, for example, in the need to take into account a broader set of issues under P3.

The much greater geographic coverage of the fishery under assessment compared to the Southeast US North Atlantic swordfish fishery means that a much greater range of potential issues arise under Principle 2 (P2). In particular, the assessment team expects to have to cover a broader range of retained, bycatch and protected species.

As with the previous assessment, the client group is Day Boat Seafood and associated vessels and fish receivers. However, this assessment will cover all longline and buoy gear fishing in the statistical areas listed above, meaning that all US licensed fishermen using longline and buoy gear in the statistical areas covered by the assessment<sup>2</sup> will be eligible to share in the certification, subject to the terms agreed with the Client.

A rigorous assessment of the wide-ranging MSC Principles and Criteria was undertaken by the assessment team and detailed and fully referenced scoring rationale is provided in the assessment tree provided in Appendix 1 of this report. Peer reviews of the assessment are presented in Appendix 2.

On completion of the assessment and scoring process, the assessment team concluded that **the North Atlantic U.S. Swordfish Pelagic Longline and Handgear Buoy Line Fishery should be certified according to the Marine Stewardship Council Principles and Criteria for Sustainable Fisheries.**

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<sup>2</sup> noting that fishermen cannot fish in waters closed to them.

The fishery received conditions as follows:

**1.1.2. Reference Points: Limit and target reference points are appropriate for the stock.** A limit reference point must be set above the level at which there is an appreciable risk of impairing reproductive capacity.

**1.2.2. Harvest Control Rules and Tools: There are well defined and effective harvest control rules in place.** Well defined harvest control rules must be in place that are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached.

**2.2.3 Bycatch Species Information and Monitoring: Information on the nature and amount of bycatch is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage bycatch.** Information must be sufficient to estimate outcome status with respect to biologically based limits; sufficient data must be collected to detect any increase in risk to main bycatch species (e.g., due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the strategy).

**2.3.1 ETP Status: The fishery meets national and international requirements for protection of ETP species; the fishery does not pose a risk of serious or irreversible harm to ETP species and does not hinder recovery of ETP species.** The effects of the fishery must be shown to be highly likely within limits of national and international requirements for protection of ETP species. Direct effects of the fishery must be shown to be highly unlikely to create unacceptable impacts to ETP species.

**2.3.2 ETP Management Strategy: The fishery has in place precautionary management strategies.** Evidence must be presented that the strategy is being implemented successfully.

**2.3.3 ETP Species information: Relevant information is collected to support the management of fishery impacts on ETP species.** Sufficient information must be presented to determine whether the fishery may be a threat to protection and recovery of ETP species.

**2.5.3 Ecosystem Information: There is adequate knowledge of the impacts of the fishery on the ecosystem.** Sufficient data must continue to be collected to detect any increase in the risk of adverse impacts on trophic structure or other ecosystem components resulting from the fishery under assessment (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures).

**3.1.3 The management policy has clear long-term objectives to guide decision-making that are consistent with MSC Principles and Criteria, and incorporates the precautionary approach.** Clear long term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach, must be made explicit within management policy.

## 2 Authorship and Peer Reviewers

### 2.1 Assessment Team

The assessment team consisted of Graeme Parkes, Rebecca Mitchell and Robert J. Trumble, Ph.D., Certification Manager and Vice President; MRAG Americas.<sup>3</sup>

**Dr. Graeme Parkes.** Dr Parkes was the assessment team leader with responsibility for Principles 1 and 3. He is a fisheries scientist with 23 years' experience. He joined MRAG following completion of his PhD on Antarctic fisheries in 1993. In 1997 he re-located to the US to establish MRAG Americas. In 2004 he returned to the UK to take the position of Technical Director with MRAG Ltd. and in 2008 became Deputy Managing Director. In 2010 he returned to MRAG Americas as Vice President – Fisheries. He has a wide range of professional experience: evaluation and mitigation of environmental impacts of fisheries, including interactions with habitats and protected species; fisheries evaluation and certification under third party certification schemes, including the MSC; certification of small scale and data deficient fisheries; EU fisheries management; survey, assessment and management of Antarctic fisheries; design and planning of observer programmes; scientific support arrangements for Regional Fisheries Management Organisations (RFMOs); and review of the science and management of US fisheries.

**Dr. Rebecca Mitchell.** Dr. Mitchell is a fisheries ecologist with 8 years research consultancy experience working at MRAG on a variety of projects relating to fisheries management. Her key research and applied fisheries management experience includes fisheries impact and risk assessment; fisheries stock assessment and monitoring; by-catch mitigation and precautionary spatial management, fisheries certification methods; and RFMO conservation measure and policy development. Prior to working at MRAG, Rebecca's doctoral research explored ecosystem effects of subsistence fisheries in the Pacific, specifically of trophic cascades in reef communities. Much of her work with MRAG since has concerned by-catch assessment and mitigation (e.g. of birds, turtles and various fish and elasmobranch species). She has managed studies testing methods to reduce by-catch of turtles in the Mediterranean and southeast Atlantic, and of deep sea fish species in the South Atlantic toothfish fisheries. Between 2007 and 2011 Rebecca fulfilled a leading role in coordinating and developing research aspects of the South Georgia Fisheries Management Contract project and related deliverables for CCAMLR. She has represented the UK at the CCAMLR WG-FSA meeting for 5 consecutive years, playing an integral role by convening the by-catch subgroup for 4 consecutive years, engaging in other sub-group discussions on observers and impacts of bottom fishing and contributing to related technical measure and policy developments to address various impacts of fishing within the CCAMLR Convention Area..

**Dr. Robert Trumble** has wide-ranging experience in marine fish science and management, fishery habitat protection, and oceanography. Dr. Trumble joined MRAG Americas in 2000 as a senior research scientist and became Vice President in 2005. At MRAG, Dr. Trumble performs project planning, assembles research teams, and conducts research, with a focus on improving management of aquatic ecosystems and the resources and fisheries they support. He is responsible for the development and management of the core business areas and functions of the company, senior oversight on major projects, and development of new business. He serves as Certification Manager

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<sup>3</sup> A significant amount of material for this assessment was derived from the previous assessment of the Florida East Coast (FEC) portion of the fishery, also undertaken by MRAG Americas. The assessment Team would like to acknowledge the valuable contribution make to that assessment, and by reference to this assessment by Dr Joseph Powers, professor of stock assessment in the School of the Coast and Environment, Louisiana State University.

for MRAG, has served as an MSC assessment team member, has led a number of MSC pre-assessments, and oversees all MSC assessment work. In 2007, 2008, 2010, and 2011 Dr. Trumble took part in the MSC training for certification bodies, which included sessions on the risk-based framework methodology.

## 2.2 Peer Reviewers

**Dr. John Musick** – Dr. Musick is the Marshall Acuff Professor Emeritus in Marine Science at the Virginia Institute of Marine Science (VIMS), College of William and Mary, where he has served on the faculty since 1967. He earned his B.A. in Biology from Rutgers University in 1962 and his M.A. and Ph.D. in Biology from Harvard University in 1964 and 1969, respectively. While at VIMS he has successfully mentored 37 masters and 49 Ph.D. students. Dr. Musick has been awarded the Thomas Ashley Graves Award for Sustained Excellence in Teaching from the College of William and Mary, the Outstanding Faculty Award from the State Council on Higher Education in Virginia, and the Excellence in Fisheries Education Award by the American Fisheries Society. In 2008 Dr. Musick was awarded The Lifetime Achievement Award in Science by the State of Virginia. He has published more than 150 scientific papers and co-authored or edited 16 books focused on the ecology and conservation of sharks, marine fisheries management, and sea turtle ecology. In 1985 he was elected a Fellow by the American Association for the Advancement of Science. He has received Distinguished Service Awards from both the American Fisheries Society and the American Elasmobranch Society (AES), for which he has served as president. In 2009 the AES recognized him as a Distinguished Fellow. Dr. Musick also has served as president of the Annual Sea Turtle Symposium (now the International Sea Turtle Society), and as a member of the World Conservation Union (IUCN) Marine Turtle Specialist Group. Dr. Musick served as co-chair of the IUCN Shark Specialist Group for nine years, and is currently the Vice Chair for Science. Since 1979, Dr Musick has served on numerous Stock Assessment, and Scientific and Statistics committees for the Atlantic States Marine Fisheries Commission, the Mid-Atlantic Fisheries Management Council, the National Marine Fisheries Service, and the Chesapeake Bay Stock Assessment Program. He has chaired the ASMFC Shark Management Technical Committee and ASMFC Summer Flounder Scientific and Statistics Committee. His consultancies have included analyses of sea turtle/ long-line interactions off the Grand Banks of Newfoundland for the Bluewater Fishermen's Association, a major trade organization representing the US Atlantic swordfish and tuna long-line fishery. Many of Dr Musick's research papers over the last decade have been devoted to problems focused on fisheries bycatch of long-lived marine animals such as sharks and sea turtles.

**Dr. John Mark Dean** – Dr. Dean is the distinguished Professor Emeritus, Marine Science Program and Senior Fellow in Science and Ocean Policy at the University of South Carolina. He earned his BA from Cornell College of Iowa in 1958; MS in 1960 and PhD in 1962 in Aquatic Ecology at Purdue University; Post doctorate from Duke University Marine Laboratory in 1962-3. He has worked for the General Electric Company and Battelle Memorial Institute (Richland, Washington) from 1963-70, as Faculty in Marine Science, University of South Carolina from 1970-2002 and became a Distinguished Professor Emeritus in 2002.

Professor Dean's research emphasizes the age and growth of recreationally and commercially important fishes in fresh water, estuarine and oceanic ecosystems and environmental resource policy and management. His laboratory developed several key methods for the use of otoliths to age larval, juvenile and adult fishes, and especially pelagic fishes. His laboratory is well recognized for training international researchers in these methods. He has taught graduate and undergraduate courses in introductory biology, zoology, ecology, biology of fishes and science and public policy. He was a Japan Society for the Promotion of Science Fellow in the Faculty of Fisheries of Hokkaido University, Hakodate, Japan in 1977 and Distinguished Visiting Professor at Nagasaki University

Faculty of Fisheries, Nagasaki, Japan in 1985. He regularly works with his colleagues in Japan on fish ecology, fishery resources and habitat utilization. In 1999, he was Visiting Professor of Fisheries Ecology at the University of Cagliari, Sardinia, Italy. Dr. Dean and his students have conducted research projects on the ecology of tuna and swordfish in the Mediterranean Sea and Atlantic Ocean and he collaborates with colleagues in Italy, Japan, France, Netherlands, Greece and Turkey. He has more than 100 publications in the refereed literature and numerous technical reports. Dr. Dean was awarded an honorary Doctor of Science degree by Cornell College of Iowa in 2003.

His service on numerous advisory committees dealing with natural resource issues, and the role of science in the development and implementation of natural resources policies at the domestic and international level enables him to bring a unique perspective to his students and to policy makers. Dr. Dean served on the Committee on Technology and Marine Habitats and the Committee to Identify High-Priority Science to meet National Coastal Needs for the National Research Council of the National Academy of Sciences. In addition, he was a founding partner of The Environmental Research Center that conducted numerous studies in the coastal zone of South Carolina in the period from its incorporation in 1973 to its closing in 1977. Their *“Environmental Inventory of Kiawah Island”* study continues to be nationally and internationally recognized as a background document for sustainable environmental planning in the coastal zone. He served on the South Carolina Coastal Council (1979-83), and was a member of the South Carolina Coastal Council Blue Ribbon Committee for Coastal Zone Management (1987). He served three terms on the South Atlantic Fishery Management Council, 1987-90 and 1999-2006. He chaired the Highly Migratory Species committee as well as serving on several other committees of the council and was the council delegate to the US ICCAT Advisory Committee. He served four terms on the United States Advisory Committee for the International Commission for the Conservation of Atlantic Tunas, was chairman 1992-96 and a member of the US delegation for ICCAT meetings in Madrid, Brussels and Marrakech. Upon completion of his third term on the SAFMC, he was appointed to their external Science and Statistics Committee. Professor Dean was appointed to the South Carolina Heritage Trust Advisory Board (1991-97) and was a member of the Advisory Board of the Land and Water Division of the South Carolina Department of Natural Resources from 1992-2007. For over 20 years, Dr. Dean was the convener of the session on Natural Resources and the Environment for Leadership South Carolina. He serves as a consultant to several seafood restaurants, including the Ponte Vecchio Ristorante in Boza, Italy, Trattoria Lillicu in Cagliari, Italy, and Blue Marlin in Columbia, South Carolina. He has recently been appointed to the Frenzy Sport Fishing Team, Columbia, SC and Costa Rica to develop scientific principles for their recreational fishing business. As a result, they have initiated a billfish research project using solar powered Pop-up Satellite tags to determine migratory pathways of sailfish. Dr. Dean was a founding member of the South Carolina Seafood Alliance and helped form and is currently a member of the Steering Committee of the South Carolina Sustainable Seafood Initiative. The South Carolina Supreme Court appointed him to the South Carolina Commission on Judicial Conduct from 2001-2016. The South Atlantic Regional Fisheries Management Council appointed him to a three year term on the Information and Education Advisory Committee in 2010. In 2011, he was the delegate for Canada and the United States at the ICCAT Symposium on Trap Fisheries for Bluefin Tuna convened in Tangier, Morocco.

### 3 Description of the Fishery

#### 3.1 Unit(s) of Certification and scope of certification sought

The MRAG Americas assessment team has determined that the North Atlantic swordfish fishery is in scope.

##### Unit of Certification

The fishery assessed for MSC certification is defined as:

<b>Species:</b>	Broadbill swordfish ( <i>Xiphias gladius</i> )
<b>Geographical Area:</b>	North Atlantic Ocean, FAO statistical area 31. U.S. east coast (NMFS statistical areas FEC, SAB, MAB, SAR, NEC, NCA, NED), excluding the Caribbean and the Gulf of Mexico
<b>Harvest method:</b>	Pelagic longline and handgear buoy line.
<b>Stock:</b>	North Atlantic stock
<b>Management System:</b>	North Atlantic swordfish are managed in federal waters by the Highly Migratory Species (HMS) Division of the National Marine Fisheries Service (NMFS) under the conservation guidelines of the International Commission for the Conservation of Atlantic Tunas. Commercial vessels fishing in jurisdictional state waters are subject to state-specific fishing regulations. Any fisherman with a federal permit must comply with the federal rules, even if fishing occurs in state waters. Thus, only fisheries subject to the federal management system will be considered here.
<b>Client group:</b>	Day Boat Seafood LLC and associated companies and vessels included through a certificate sharing agreement.
<b>Other Eligible Fishers:</b>	US licensed fishermen using longline and buoy gear in the waters of the North Atlantic off the US east coast (in statistical areas FEC, SAB, MAB, SAR, NEC, NCA, NED), excluding the Caribbean and the Gulf of Mexico.

Through the discussions with the client, the Unit of Certification was chosen to represent the largest area of the US North Atlantic fishery likely to meet the conditions for certification. Areas of the North Atlantic excluded from the Unit of Certification were identified to have impediments to certification.

##### 3.1.1 Scope of Assessment in Relation to Enhanced Fisheries

The US North Atlantic Swordfish fishery is not enhanced.

##### 3.1.2 Scope of Assessment in Relation to Introduced Species Based Fisheries (ISBF)

The North Atlantic Swordfish is not an introduced species.

## 3.2 Overview of the fishery

### 3.2.1 Description of the fishery

North Atlantic swordfish are widely distributed across the north Atlantic (Figure 1). Harpoon fisheries for this species have existed at least since the late 1800s. Directed longline fisheries from Canada, EU-Spain, and the United States have operated since the late 1950s or early 1960s. Other directed swordfish fisheries include fleets from Brazil, Morocco, Namibia, EU-Portugal, South Africa, Uruguay, and Venezuela.

Two distinct fisheries for Atlantic HMS species occur on the US East Coast: the pelagic longline fishery and the handline buoy gear fishery, the latter occurring principally in the southern part of the area (the Florida East Coast - FEC). The U.S. pelagic longline fishery for Atlantic HMS primarily targets swordfish, yellowfin tuna, or bigeye tuna in various areas and seasons. Secondary target species include dolphinfish; albacore tuna; pelagic sharks including mako, thresher, and porbeagle sharks; as well as several species of large coastal sharks. Although this gear can be modified (i.e., depth of set, hook type, etc.) to target swordfish, tunas, or sharks, it is generally a multi-species fishery. Vessel operators are opportunistic, switching gear style and making subtle changes to target the best available economic opportunity of each individual trip. Longline gear sometimes attracts and hooks non-target finfish with no commercial value, as well as species that cannot be retained by commercial fishermen due to regulations, such as billfish. Pelagic longlines may also interact with protected species such as marine mammals, sea turtles, and seabirds. Thus, this gear has been classified as a Category I fishery with respect to the Marine Mammal Protection Act. Any species (or undersized catch of permitted species) that cannot be landed due to fishery regulations is required to be released, whether dead or alive.



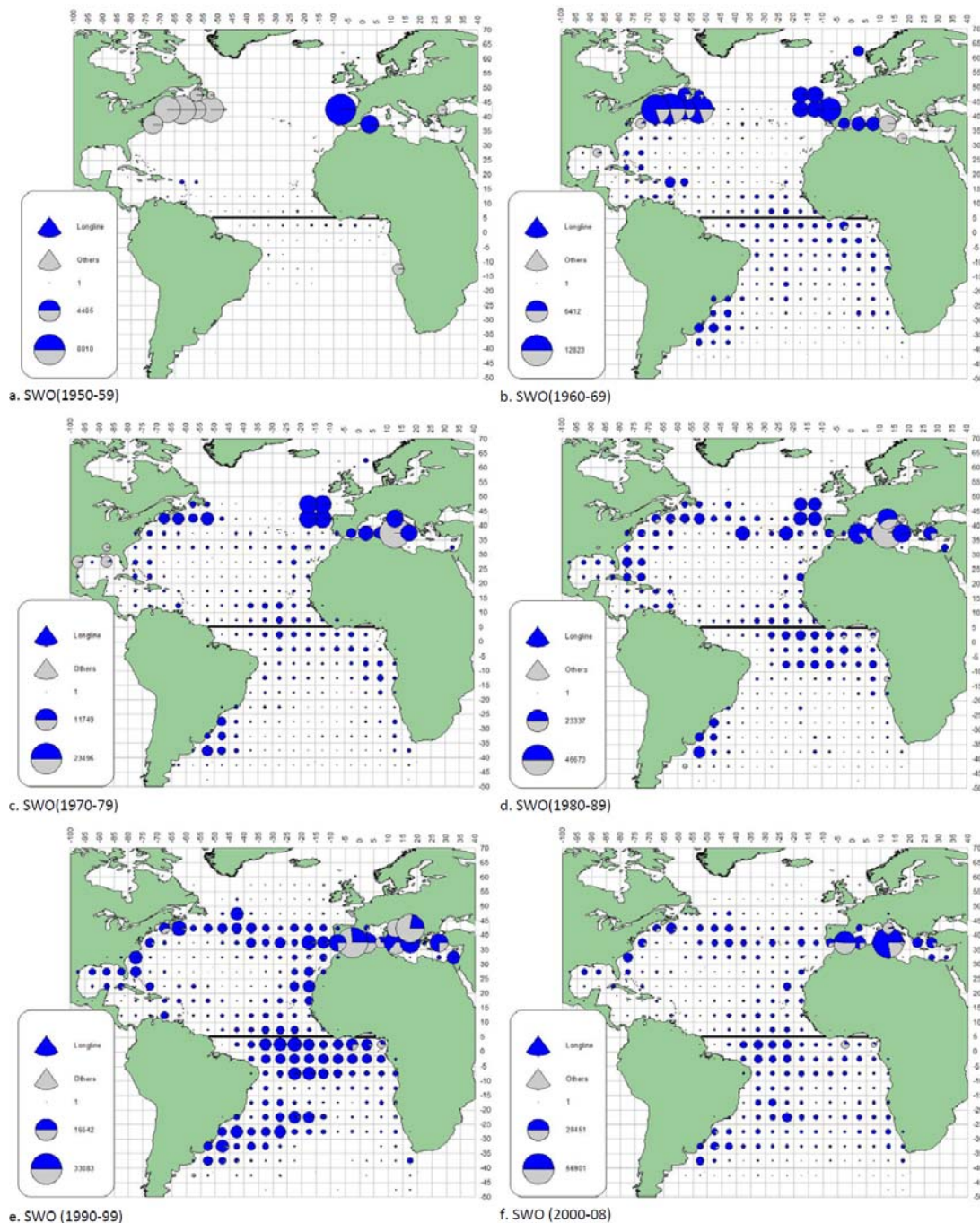


Figure 1 Geographic distribution of swordfish cumulative catch (t) by gear, in the Convention area, shown on a decadal scale. The more contemporary period (2000 to 2008) is shown on the bottom right (ICCAT Summary of Atlantic Swordfish Status 2010. SWO-ATL-ATLANTIC SWORDFISH)

Pelagic longline gear is composed of several parts (Figure 2). The primary fishing line, or mainline of the longline system, can vary from five to 40 miles in length, with approximately 20 to 30 hooks per mile. The depth of the mainline is determined by ocean currents and the length of the floatline, which connects the mainline to several buoys, and periodic markers which can have radar reflectors or radio beacons attached. Each individual hook is connected by a leader to the mainline. Lightsticks,



which contain chemicals that emit a glowing light, are often used for targeting swordfish. When attached to the hook and suspended at a certain depth, lightsticks attract bait fish which may, in turn, attract pelagic predators.

When targeting swordfish, the lines generally are deployed at sunset and hauled at sunrise to take advantage of swordfish nocturnal near-surface feeding habits (Berkeley *et al.*, 1981). Except for vessels of the distant water fleet which undertake extended trips, fishing vessels preferentially target swordfish during periods when the moon is full to take advantage of increased densities of pelagic species near the surface. The number of hooks per set varies with line configuration and target catch.

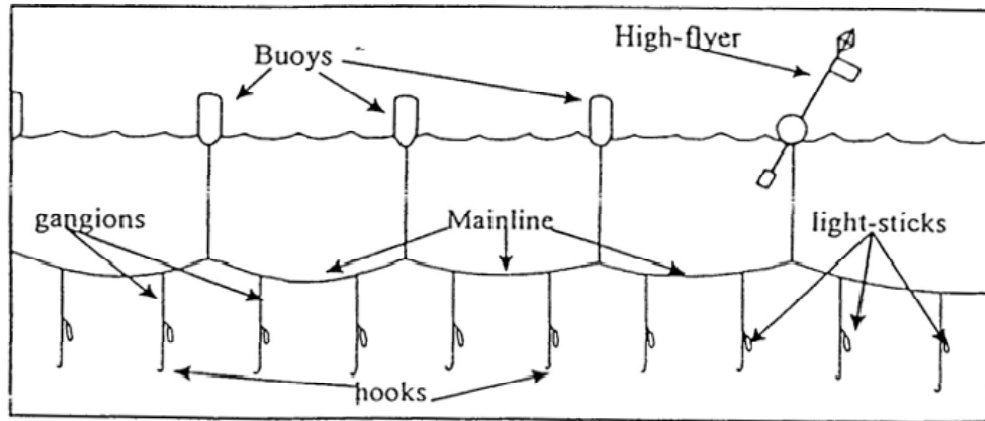


Figure 2 Typical U.S. Pelagic Longline Gear (source: Arocha, 1996).

The pelagic longline fishery sector is comprised of five relatively distinct segments with different fishing practices and strategies (Figure 3). These segments are (i) Gulf of Mexico yellowfin tuna fishery (GOM), (ii) south Atlantic-Florida east coast to Cape Hatteras swordfish fishery (FEC and SAB), (iii) mid-Atlantic and New England swordfish and bigeye tuna fishery (MAB and NEC), (iv) U.S. distant water swordfish fishery (NED, NCA and TUN), and (v) Caribbean Islands tuna and swordfish fishery (CAR). This assessment covers the US East Coast fishery with the exclusion of the Gulf of Mexico, the Caribbean, and TUN.

Some vessels fish in more than one fishery segment during the course of the year. Each vessel type has different range capabilities due to fuel capacity, hold capacity, size, and construction. In addition to geographical area, segments differ by percentage of various target and non-target species, gear characteristics, bait, and deployment techniques.

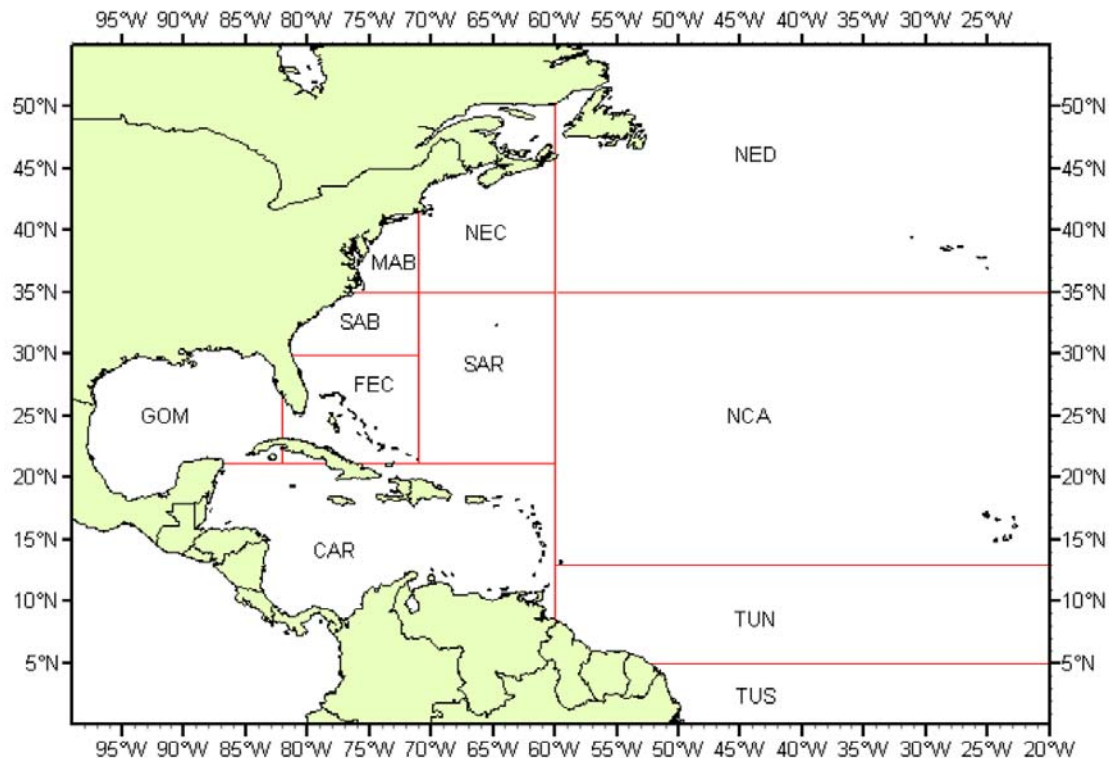


Figure 3 US domestic fishing areas: Caribbean (CAR), Florida East coast (FEC), Gulf of Mexico (GOM), Mid Atlantic Bight (MAB), Northeast Central (NEC), Northeast Distant (NED), South Atlantic Bight (SAB), Sargasso Sea (SAR), North Central Atlantic (NCA), Tuna North (TUN), and Tuna South (TUS) (2011 Annual Report of The United States to ICCAT, U.S. Department of Commerce, NOAA Fisheries. 1 October 2011).

A commercial swordfish handgear fishery has recently developed off the east coast of Florida (Figure 3; NMFS, 2006). Commercial buoy gear was authorized in 2006 for Swordfish Directed and Handgear permit holders. Swordfish Directed permit holders may retain swordfish only if they have also been issued a Shark Directed or Incidental limited access permit and an Atlantic Tunas Longline permit. Swordfish Handgear permit holders are not required to be issued other permits to retain swordfish. HMS Charter/Headboat, Angling, and Swordfish Incidental permit holders may not fish with buoy gear. Buoy gear means a fishing gear consisting of one or more floatation devices supporting a single mainline to which no more than two hooks or gangions are attached (Figure 4). The buoy gear fishery is usually undertaken at night.

Authorized permit holders may not possess, or deploy, more than 35 floatation devices and may not deploy more than 35 individual buoy gears per vessel. Information on the level of recent fishing effort and catches are given in the tables below. Prior to 2007, buoy gear catch data were included in handline catch data. About 40 handgear vessels currently target swordfish off the east coast of Florida, each deploying on average 11 buoys. This gear is used to primarily target swordfish, although dolphin fish (*Mahi mahi*), oilfish (*Ruvettus pretiosus*) and shortfin mako (*Isurus oxyrinchus*) are also landed in small quantities.

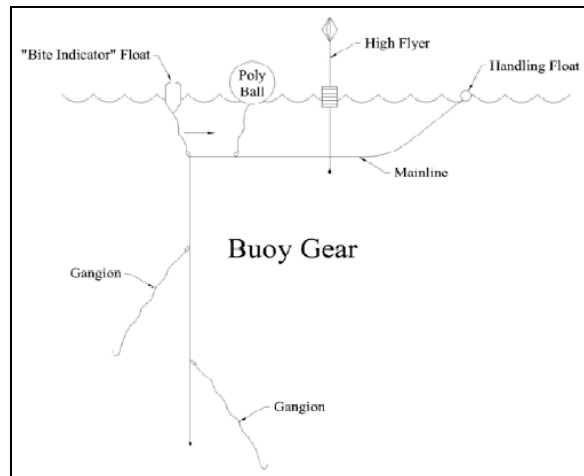


Figure 4 A diagram of a buoy gear with four floatation devices attached (source: NMFS, 2006).

### 3.2.2 Historical development of the Fishery

U.S. commercial swordfish fishing in the Atlantic Ocean is reported to have begun in the early 1800s as a harpoon fishery off the coast of New England. This fishery traditionally consisted of harpoon vessels operating out of Rhode Island and Massachusetts where they took extended trips for swordfish north and east of Hudson Canyon and particularly off Georges Bank and could land as many as 20 to 25 large swordfish over a ten-day period. These fish primarily consisted of large fish that fanned on the surface and were available to the harpoon gear, some weighing as much as 600 lbs, but averaging about 225 to 300 lbs at the turn of the century. Because of the limited effort directed towards large fish, the stock was sufficient to support a sustainable seasonal swordfish fishery for more than 150 years.

Most swordfish caught in the United States in the early 1900s were harvested with harpoon. Harpoon landings declined from the 1940s through the 1960s. This fishery continued at a low level until the global expansion of longline fisheries in the 1950s and 1960s (Myers and Worm 2003). In more recent years, a new commercial swordfish fishery utilizing handgear has developed off the east coast of Florida. This fishery has been operating under the current regulations, which require that handlines be restricted to no more than two hooks and be released and retrieved by hand.

Pelagic longline fisheries exerted the greatest fishing effort on the North Atlantic swordfish stock and contributed to a decline in stock status. ICCAT requested a reduction in fishing effort by all party members to enable the stock to rebuild. Today, the U.S. fleets do not take the full TAC allocated by ICCAT, which has enabled a modest transfer of quota to Canada over the past few years (Table 2). The reduced level of catches below the U.S. allocation has helped to enable the swordfish population to recover, and was considered rebuilt in 2009 (SCRS 2009).

Table 2 Landings and quotas (in metric tonnes dressed weight) for the U.S. North Atlantic swordfish fisheries (2005-2012) (source: NOAA<sup>4</sup>).

North Atlantic swordfish quota (mt dw)		2005	2006	2007	2008	2009	2010	2011	2012
Baseline quota		2,937.60	2,937.60	2,937.60	2,937.60	2,937.60	2,937.60	2,937.60	2,937.60
Quota carried over		3,359.10	4,691.20	1,468.80	1,468.80	1,468.80	1,468.80	1,468.80	734.4*
Adjusted quota		<b>6,296.70</b>	<b>7,628.80</b>	<b>4,406.40</b>	<b>4,406.40</b>	<b>4,406.40</b>	<b>4,406.40</b>	<b>4,406.40</b>	<b>3,559.20</b>
Quota allocation	Directed category	5,895.20	7,246.10	3,601.90	3,620.70	3,639.50	3,658.30	3,677.10	3,209.20
	Incidental category	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300
	Reserve category	101.50	82.70	504.50	485.70	466.90	448.10	429.30	50
Utilized quota	Landings	1,471.80	1,291.50	1,167.50	1,695.70	1,863.40	2,035.80	TBD	TBD
	Reserve transfer to Canada	18.80	18.80	18.80	18.80	18.80	18.80	18.80	
	Reserve transfer to Morocco								112.80
Total under-harvest from previous year		4,806.10	6,318.50	3,220.10	2,691.90	2,524.20	2,370.60	TBD	2,208.3
Dead discards		114.90	154.90	149.20	149.80	106.80	98.30	TBD	TBD
Carryover available		4,691.20	1,468.80	1,468.80	1,468.80	1,468.80	1,468.80	TBD	TBD

\*Underharvest carry over cap changed in 2011 from 50 percent to 25 percent of the baseline quota

### 3.2.3 User rights

The U.S. federal system incorporates gear and license (permit) limitations to rationalize fishing effort and restrictions on vessel upgrading within the swordfish fishery<sup>5</sup>. North Atlantic swordfish can only be taken with handgear or longline, except that a limited number of swordfish may be taken incidentally on a vessel with squid trawl, and to fish for or take Atlantic swordfish, commercial fishermen are required to hold a permit for the vessel they are operating (see text box for current permit types). These permits are issued under a limited access system such that to enter the fishery it is necessary to obtain a permit from a fisherman who is leaving the fishery. In general, an owner may upgrade a vessel with a directed or handgear limited access permit, or transfer the permit to another vessel, only if the upgrade or transfer does not result in an increase in horsepower of more than 20 percent or an increase of more than 10 percent in length overall, gross registered tonnage, or net tonnage from the original qualifying vessel's specifications.

#### Permit types in the Atlantic Swordfish Fishery

- **Directed Permit:** Commercial fishermen must possess a valid swordfish limited access permit for the vessel they are operating in order to fish for, take, or retain Atlantic swordfish. All commercial swordfish permits are issued under a limited access system. To enter the fishery, fishermen must obtain a permit from a permit holder who is leaving the fishery. Limited access permits are transferred between vessels and are subject to upgrading restrictions. Atlantic Directed and Incidental swordfish permits are valid only when held in conjunction with both a shark limited access and Atlantic tunas longline permit. North Atlantic Swordfish can

<sup>4</sup> [http://www.nmfs.noaa.gov/sfa/hms/newslist/2011/09-14-11\\_Final\\_2011\\_Swordfish\\_Specifications.pdf](http://www.nmfs.noaa.gov/sfa/hms/newslist/2011/09-14-11_Final_2011_Swordfish_Specifications.pdf) ; 50 CFR Part 635 and [http://www.nmfs.noaa.gov/sfa/hms/newslist/2012/07-31-12\\_2012\\_swordfish\\_email\\_notice.pdf](http://www.nmfs.noaa.gov/sfa/hms/newslist/2012/07-31-12_2012_swordfish_email_notice.pdf)

<sup>5</sup> The regulations applicable to the North Atlantic Swordfish fishery are provided in the HMS Commercial Compliance Guide (as of August 16, 2010), at [http://www.nmfs.noaa.gov/sfa/hms/Compliance\\_Guide/Comm/Comm\\_Compliance\\_Guide\\_Total.pdf](http://www.nmfs.noaa.gov/sfa/hms/Compliance_Guide/Comm/Comm_Compliance_Guide_Total.pdf)

only be taken with handgear (bandit gear, handline, harpoon, rod and reel), buoy gear (directed or handgear permit holders only), or longline, except that a limited number of swordfish may be taken incidentally on a vessel issued an Incidental HMS Squid Trawl permit.

- Incidental HMS Squid Trawl permit: is available to all valid *Illex* squid moratorium permit holders and authorizes incidental swordfish retention using trawl gear subject to target catch requirements.
- Prior to renewing or obtaining an Atlantic Directed or Incidental swordfish limited access permit, fishermen must become certified at a Protected Species Safe Handling, Release and Identification workshop if fishing with longline or gillnet gear.

Source: HMS Commercial Compliance Guide (As of November 11, 2011).

[http://www.nmfs.noaa.gov/sfa/hms/Compliance\\_Guide/Comm/Comm\\_Compliance\\_Guide\\_Total.pdf](http://www.nmfs.noaa.gov/sfa/hms/Compliance_Guide/Comm/Comm_Compliance_Guide_Total.pdf)

Recreational fishermen are required to hold an Atlantic HMS (Angling category) recreational fishing permit in order to recreationally harvest Atlantic sharks, tunas, swordfish, and billfish in federal waters. The following limits apply to the recreational fishery<sup>6</sup>:

- Charter Vessels - 1 swordfish per paying passenger, up to 6 swordfish per vessel, per trip.
- Headboat Vessels - 1 swordfish per paying passenger, up to 15 swordfish per vessel, per trip.
- Angling Category Vessels - 1 swordfish per person, up to 4 swordfish per vessel, per trip.

### 3.3 Principle One: Target Species Background

#### 3.3.1 Stock biology and structure

Swordfish are cosmopolitan, and can be found in the tropical and temperate waters of all the oceans between 45°N and 44°S. They are distributed widely in the Atlantic Ocean and Mediterranean Sea. Over the range of the swordfish, variation in the distribution by size and sex is evident, both geographically and vertically. Larger individuals are found in deeper colder waters and males are more prevalent in warmer waters than females.

Swordfish mostly spawn in the western warm tropical and subtropical waters throughout the year, although seasonality has been reported in some of these areas. They are found in the colder temperate waters during summer and fall months. Swordfish have been observed spawning in the Atlantic Ocean, in water less than 75 m. Solitary males and females appear to pair up during the spawning season. The most recognized spawning site is in the Mediterranean, off the coast of Italy where in July and August males are observed chasing females. Traditional Atlantic spawning areas are the Gulf of Mexico, south of Sargasso Sea and east of the Antilles in the Straits of Florida, along the south east coast of the US, with new spawning areas recently identified between 10 and 15°N and longitudes 30-40°W. Spawning may occur year round however peak activity is between December and July, in water temperatures ranging from 23-26° C (ICCAT 2007).

Swordfish can reach a maximum weight in excess of 500 kg. Females grow faster than males and reach a larger maximum size. Swordfish are difficult to age, but tagging studies have shown that some swordfish can live up to 15 years. The size at sexual maturity of swordfish varies with location. About 50% of females are considered to be mature by age five, at a length of about 180cm The SCRS has adopted the size at first maturity (L50%) of 179cm (5 years) for swordfish in the North Atlantic stock. However, the most recent information indicates a smaller length and age at maturity. Males reach maturity one year earlier than females. Reproductive activity of females appears to be related

<sup>6</sup> 2012 Recreational Compliance Guide.

[http://www.nmfs.noaa.gov/sfa/hms/Compliance\\_Guide/Rec/Rec\\_Compliance\\_Guide\\_Total.pdf](http://www.nmfs.noaa.gov/sfa/hms/Compliance_Guide/Rec/Rec_Compliance_Guide_Total.pdf)

to temperatures in the epipelagic layers, and is largely restricted to the warm tropical regions of the western Atlantic (ICCAT 2008)

There is considerable individual variation in fecundity with females carrying from 1 million to 29 million eggs in their gonads. The pelagic eggs are buoyant, measuring 1.6-1.8mm in diameter. Embryonic development occurs during the 2 ½ days following fertilization. Young swordfish reach about 140 cm LJFL (lower-jaw fork length) by age three.

Despite ageing difficulties, growth curves have been developed for both males and females showing sexual-dimorphism in which females at older ages are larger than males. However, the application of these growth relationships to traditional age-structured assessments has been limited because size-frequency information is limited to landed fish which are gilled and gutted, thus, the sex is undetermined. Unisex growth curves have been developed; however, their application for assessment purposes is limited.

Larval swordfish feed on copepods, but at an early juvenile age their diet consists almost entirely of fish. Adults feed on a wide variety of prey including groundfish, invertebrates, pelagic and deep-water fish. Adults are believed to feed throughout the water column, and based on recent electronic tagging studies undertake diurnal migrations, rising to the surface mixed layer at night and descending to deeper waters during day to feed on fishes and squids (ICCAT 2008). Smaller prey is generally eaten whole, while larger prey is often observed with slash marks from the swordfish rostrum. It still remains unclear when and how often the bill is used during feeding (ICCAT 2007). Swordfish are apex predators, located at the top of the food chain. Predation on swordfish (other than human) is expected to be limited to that on young and infirm swordfish.

Swordfish are known to migrate in significant numbers between the relatively hot subtropical waters and the temperate waters of the North and South Atlantic. This has been shown through tagging recoveries where tagged fish were released from Northwest, Northeast and Southwest Atlantic fisheries. Importantly, these tagging programs have not shown extensive movements across the Equator (ICCAT 2007c). The results of these programs have not shown the existence of extensive trans-Atlantic migration of this species, but these observations are limited by problems associated with use of conventional tags (ICCAT 2007).

Significant differences in size of initial sexual maturity and growth parameters between the Atlantic and Mediterranean provides evidence of distinct stocks. Recent genetic work indicates there is significant difference in the genetic structure of swordfish between the populations of the four regions: North Atlantic, South Atlantic, Mediterranean and Indian Ocean, with a Mediterranean population significantly distinguished from the others (ICCAT 2007c). However, boundaries between these stocks are not well defined biologically. Areas of mixing of the North and South Atlantic Stock probably occur around latitude 5°N and, perhaps, further north, between 10 and 20°N. In addition, there is evidence to support exchanges between the Mediterranean and Northeast Atlantic. Some consider the area of mixing of these two stocks to be around 10°W (ICCAT 2007).

Based on this information, current understanding is that there is a separate Mediterranean group, and separate North and South Atlantic groups. Thus, ICCAT assesses and manages swordfish on three distinct units of management: North Atlantic, South Atlantic and Mediterranean with the North and South stocks separated at 5° North.

### 3.3.2 Stock status and reference points

The current status of North Atlantic Swordfish

Maximum Sustainable Yield:	13,730 t (80% confidence interval 13,020-14,182)
Relative Biomass ( $B_{2009}/B_{MSY}$ ):	1.05 (0.94 - 1.24)
Relative Fishing Mortality Rate $F_{2008}/F_{MSY}$ :	0.76 (0.67 - 0.96)

Biomass is above MSY and the fishing mortality rate is below that which would produce MSY. Note that North Atlantic swordfish underwent high exploitation in the 1980s and 1990s such that biomass was less than  $B_{MSY}$  and fishing mortality rate was above  $F_{MSY}$ . Management actions were initiated in the 1990s (Figure 5).

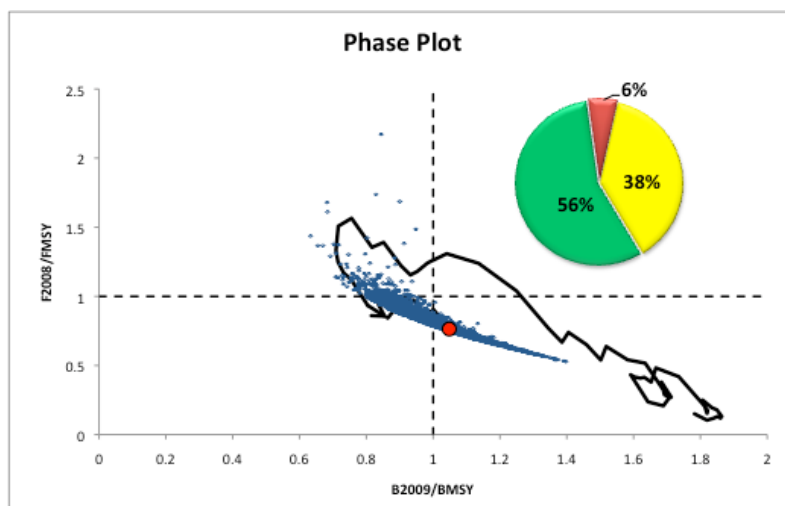


Figure 5 North Atlantic swordfish stock status: uncertainty in current status (blue dots), the current best estimate of status (red dot) and the trajectory of the stock status (black line, initiated in the lower right hand corner corresponding to the 1950). Percentages relate to probability that the current status is  $B > B_{MSY}$  and  $F < F_{MSY}$  (green),  $B < B_{MSY}$  and  $F < F_{MSY}$  (yellow) and  $B < B_{MSY}$  and  $F > F_{MSY}$  (red). The x-axis represents relative biomass, and the y-axis relative exploitation rate.

The results suggest that there is greater than 50% probability that the stock is at or above  $B_{MSY}$ , and thus the ICCAT rebuilding objective established in 1999 has been achieved. However, it is important to note that since 2003 the catches were below the TAC's, greatly increasing the chances for rapid recovery.

The biomass trend shows a consistent increase since 2000. The current results indicate that the stock is at or above  $B_{MSY}$ . The relative trend in fishing mortality shows that the level of fishing peaked in 1995, followed by a decrease until 2002, followed by small increase in the 2003-05 period and downward trend since then (Figure 6). Fishing mortality has been below  $F_{MSY}$  since 2005.

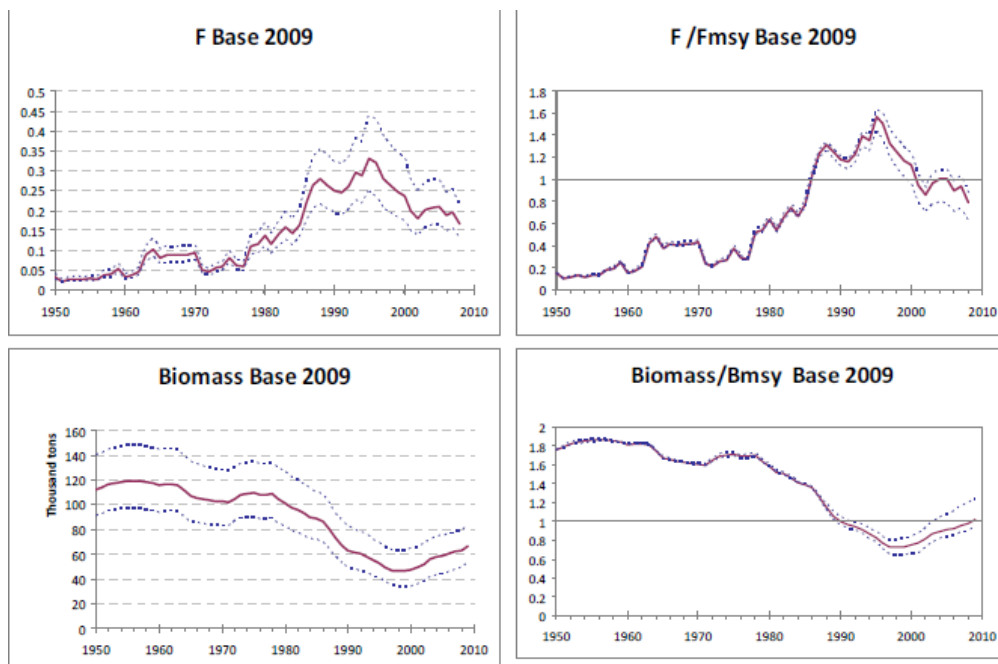


Figure 6 Biomass and fishing mortality rate trends in absolute scales and relative to MSY Dotted lines are 80% confidence intervals

In 2010 the SCRS management advice was:

“Consistent with the goal of the Commission’s swordfish rebuilding plan [Rec. 96-02], in order to maintain the northern Atlantic swordfish stock at a level that could produce MSY, with greater than 50% probability, the Committee recommends reducing catch limits allowed by Rec. 06-02 (15,345 t) to no more than 13,700 t, which reflects the current best estimate of maximum yield that could be harvested from the population under existing environmental and fishery conditions. Should the Commission wish to have greater assurance that future biomass would be at or above  $B_{MSY}$  while maintaining  $F$  at or below  $F_{MSY}$ , the Commission should select a lower annual TAC, depending on the degree of precaution the Commission chooses to apply in management.

The Committee noted that allowable catch levels agreed in [Recs. 06-02 and 08-02] exceeded scientific recommendations. The successful rebuilding of this stock could have been compromised if recent catches had been higher than realized.”

In 2011, the SCRS advice was

“Future TACs above MSY are projected to result in 50% or lower probabilities of the stock biomass remaining above  $B_{MSY}$  over the next decade as the resulting probability of  $F$  exceeding  $F_{MSY}$  for these scenarios would trend above 50% over time. A TAC of 13,000 t would provide approximately a 75% probability of maintaining the stock at a level consistent with the Convention objective over the next decade.”

And

“The Committee continues to note that the allowable country-specific catch levels agreed in [Recs. 06-02, 08-02, and 10-02] continue to exceed the TAC adopted by the Commission and



the scientific recommendations. Such potential catches could compromise the rebuilt state of this stock.”

Note that the implicit, but not explicit, reference points used in status determinations are biomass and fishing mortality rates at MSY. This relates to the ICCAT Convention stated goal of maintaining catches at maximum sustainable yield. However, no distinction is made between target and limit reference points, nor have reference points been formally adopted by ICCAT.

### 3.3.3 Harvest Strategy and Harvest Control Rule

The north Atlantic swordfish fishery underwent a period of rapid expansion and extensive exploitation in the 1980s and 1990s (Figure 7). In the early 1990s the SCRS advice was to reduce fishing mortality rates in order to recover the biomass to the MSY level. Fishing mortality rates were reduced by several ad hoc measures including transfer of effort to the South Atlantic by some countries, implementation of a minimum size and later in the 1990s the implementation of TACs which were renegotiated after every stock assessment. In 1999 a more formal recovery plan was adopted specifying a recovery time and the TAC to be taken. Since then, the plan and TACs were amended in response to stock assessment information. Additionally, fishing mortality rates on small fish were further reduced by implementation of closed areas in Northwest Atlantic (US) waters in the early 2000s.

The harvest strategy over the last decade has been to recover biomass to  $B_{msy}$ . This is in accordance with ICCAT Convention goals. While this has been successful, there is not a formal ICCAT stock-wide strategy to go forward. Nor are there formal harvest control rules to establish contingencies should stock status change and to avoid deterioration of the stock. In recent years the catch has been below the ICCAT TAC (Figure 8). However, the TACs chosen have, in some of those years, exceeded the scientific advice (ICCAT 2010).

Given the small proportion of swordfish harvested by the hand line buoy gear sector (Section 3.2.1) and the high survival of discarded swordfish relative to the longline fishery, monitoring of the longline sector characterizes the discards of the swordfish at an accuracy sufficient to support the harvest control rules.

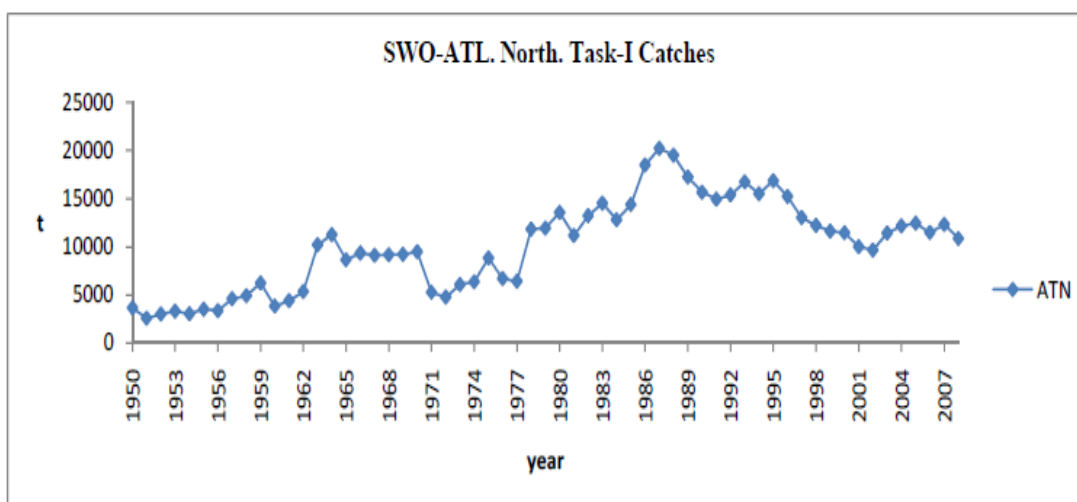


Figure 7 Catch trajectory of North Atlantic (North Atlantic Swordfish Assessment, SCRS 2009)

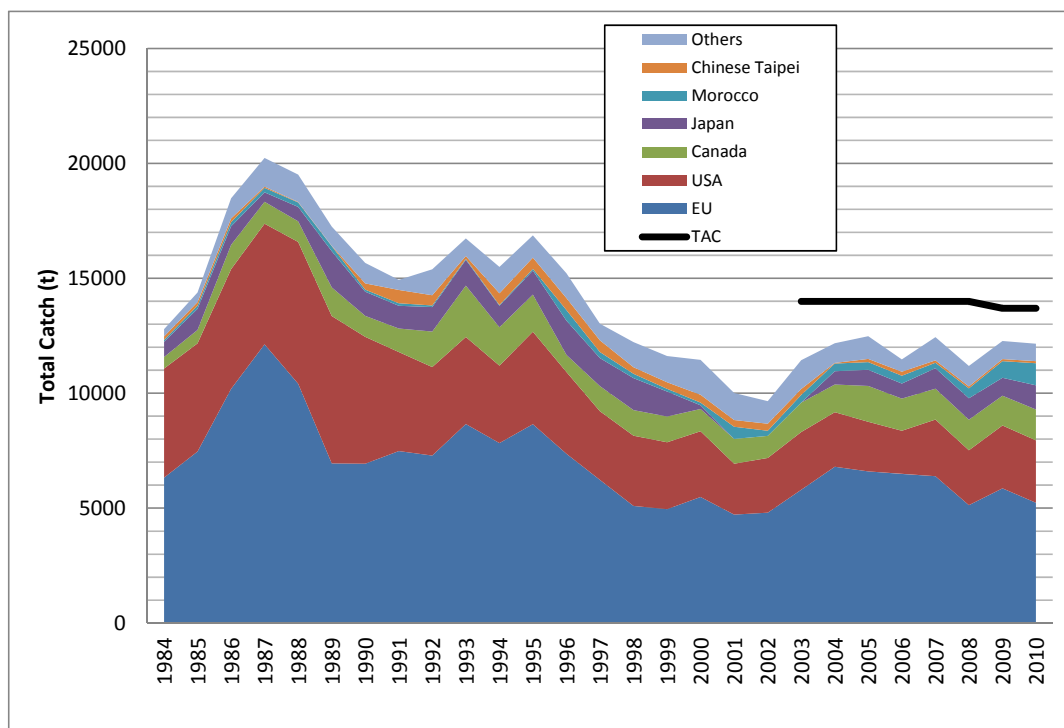


Figure 8 Catch and recent TACs for North Atlantic swordfish

### 3.3.4 Information and Stock Assessment

Stock assessments are based upon a suite of data that are reported to ICCAT including catches, catches by size, effort and CPUE and biological and distributional/migration data. Responsibility for reporting lies with the member country, but in the developed fisheries the monitoring mechanisms include logbook reports, monitoring of dealers, at-sea observers and dockside sampling of sizes. In the case of the United States, these are all done.

North Atlantic catches are currently about 12,000 mt (Table 3, Figure 8) of which about 2700 mt are by US vessels.

Table 3 North Atlantic Swordfish Catch (metric tons) 1984-2010 (ICCAT SCRS 2009, 2011)

	Total	Can	Japan	EC	US	Morocco	Chinese Taipei	Others
1984	12791	499	665	6330	4749	81	154	314
1985	14383	585	921	7467	4705	137	152	420
1986	18486	1059	807	10191	5210	181	157	881
1987	20236	954	413	12129	5247	197	52	1244
1988	19513	898	621	10416	6171	196	23	1188
1989	17250	1247	1572	6948	6411	222	17	833
1990	15672	911	1051	6936	5519	91	270	894
1991	14934	1026	992	7481	4310	110	577	438
1992	15394	1547	1064	7289	3852	69	441	1132

	Total	Can	Japan	EC	US	Morocco	Chinese Taipei	Others
1993	16738	2234	1126	8663	3783	39	127	766
1994	15501	1676	933	7833	3366	36	507	1150
1995	16872	1610	1043	8655	4026	79	489	970
1996	15222	739	1494	7367	3559	462	521	1080
1997	13025	1089	1218	6233	2987	267	509	722
1998	12223	1115	1391	5094	3058	191	286	1088
1999	11622	1119	1089	4960	2908	119	285	1142
2000	11453	968	161	5485	2863	114	347	1515
2001	10011	1079	0	4720	2217	523	299	1173
2002	9654	959	0	4802	2384	223	310	976
2003	11442	1285	0	5799	2513	329	257	1259
2004	12175	1203	575	6799	2380	335	30	853
2005	12480	1558	705	6600	2160	334	140	983
2006	11473	1404	656	6492	1873	341	172	535
2007	12444	1348	889	6390	2463	237	103	1014
2008	11188	1334	935	5129	2387	430	82	891
2009	12276	1300	778	5865	2730	724	89	790
2010	12154	1346	1047	5237	2714	963	88	759

In the case of US fisheries, catches are monitored by dealer reporting of catches and catches at size of fish, logbooks and observer reports. Observer sampling has varied considerably over the last decades over 2-6% of sea days (although in 2008 it reached 13% of the sets). Note that size sampling is as landed, which are gilled and gutted. Conversions are calculated to round weight; however, the sex of fish landed as gilled and gutted cannot be determined. In the past observers would bag gonad samples and return to the dock with them with associated lengths, such that a sample of sex at size was determined. However, the sampling was limited and the program could not be maintained.

Indices of abundance are calculated in biomass and in numbers. These are estimated using general linear models adjusting for the spatial and temporal distribution of the fisheries, as well as environmental data. Indices are age-specific for ages less than 5 years old. At those ages the sexually-dimorphic growth rates have not diverged, thus the estimates of abundance trends (including recruitment of age 1-2 year old fish) are deemed useful for monitoring changes. However, the size data used in these analyses only go back to the 1980s. Age-specific indices are calculated for US, Canadian and European Community (EC) fisheries. Long term pooled biomass CPUEs combined for US, Canadian, Japanese and EC fisheries are also calculated going back to the 1950s.

A suite of assessment models are used to assess North Atlantic Swordfish including surplus production models, VPA age-structured models and Bayesian production models. Previous simulation work has shown bias when using VPAs based on unisex growth models to estimate catch at age. Therefore, the surplus production model is deemed by SCRS to be most appropriate for determining status given the availability of the data. However, the other models as well as CPUE trends are monitored and used as guidance in providing management advice. The status and abundance and mortality trends given in Section 3.6.2 are based upon this model.

## 3.4 Principle Two: Ecosystem Background

### 3.4.1 Context

Assessment of Principle 2 (P2) components is based on the ‘marginal contribution’ that the fishery (encompassed by the unit of certification) makes to the status or recovery of the Component under consideration. There are five Components to be considered: retained species, bycatch species, endangered, threatened and protected (ETP) species, habitats and ecosystem. For each of these components, the status, management strategy, and extent of information and monitoring is considered for each relevant scoring element (e.g. species). Here, we introduce the local environmental and management context relevant to P2 components of the North Atlantic US Swordfish Pelagic Longline and Handgear Buoy Line fishery and, where appropriate, how these relate to wider geographical and international perspectives.

The U.S. East Coast consists of two diverse ecosystems, both of which are characterized by a temperate climate. The Northeast U.S. Continental Shelf, which spans from the Gulf of Maine to Cape Hatteras, NC, is characterized by 28 major estuaries and river systems and four major sub-areas, including the Gulf of Maine, Georges Bank, Southern New England, and Mid-Atlantic Bight. The nutrient-enriched estuaries and gyre systems of the Gulf of Maine and Georges Bank support high levels of phytoplankton and zooplankton, making it one of the world’s most productive ecosystems. The catch composition of the Northeast U.S. Continental Shelf consists of demersal fish (Atlantic cod, haddock, hakes, pollock, flounders, monkfish, dogfish skates, black sea bass), pelagic fish (mackerel, herring, bluefish, butterfish), anadromous species (herrings, shad, striped bass, salmon), and invertebrates (lobster, sea scallops, surfclams, quahogs, northern shrimp, squid, red crab). This ecosystem is influenced by the Shelf Slope Front which brings cold, fresh water down from the Labrador Sea, which is in contrast with the Southeast U.S. Shelf that is influenced by the Gulf Stream. The Gulf Stream brings warm waters from the Gulf of Mexico and creates very different oceanographic conditions in the Southeast from those in the Northeast. The two ecosystems are separated by the convergence of the Gulf Stream with the coast of Cape Hatteras, NC. The Gulf Stream is deflected offshore and indirectly affects the Northeast through warm-core rings that travel northward. The Southeast U.S. Shelf spans from the Straits of Florida to Cape Hatteras, NC, and consists of .27% of the world’s coral reefs, 18 estuary and river systems, bays including the NC Albemarle-Pamlico Sound, the 2nd largest estuary in the nation, nearshore and barrier islands, freshwater and estuarine habitats, and extensive coastal marshes. It is considered a moderately productive ecosystem, with upwelling less intense than in the Northeast creating short-lived plankton blooms. Major species in the ecosystem include coastal pelagic (mackerel, dolphinfish, cobia), highly migratory species (swordfish, tuna, albacore, marlin, sailfish, spearfish, sharks), invertebrates (shrimp, lobster, crab, conch), Atlantic menhaden, reef fish, drum and croaker, and Atlantic sharks.

Primary fishery target species in this region include coastal sharks and coastal pelagic species (e.g., mackerel, dolphinfish, and cobia), highly migratory pelagic species (e.g., swordfish, tuna, and sharks), Atlantic menhaden, invertebrates (e.g., shrimp, lobster, crab, and conch), reef fish, drum, and croaker. The U.S. Atlantic pelagic longline fishery is a major component of the fisheries for highly migratory pelagic species in this region.

Bycatch and associated mortality of a number of species groups including billfish, undersized swordfish, and sea turtles has been a particular concern in the U.S. Atlantic pelagic longline fishery for some time. Populations of these mostly Atlantic-wide species are under continuing pressure from fisheries and other anthropogenic activities across their distribution. An assessment of the status of US fisheries by NMFS (NMFS, 1997) in September 1997 designated Atlantic blue marlin, Atlantic

white marlin, bluefin tuna, and the large coastal shark (LCS) complex as overfished. In 1998 West Atlantic sailfish and bigeye tuna were added to the overfished stocks list (although bigeye tuna has since recovered, see Section 3.4.2.3) and Northern albacore tuna was added in 1999. Several sea turtle stocks which interact with the Atlantic pelagic longline fishery are also listed as either endangered or threatened (NMFS, 2000).

In the U.S., Atlantic highly migratory species (which includes tunas, billfish and sharks) are managed under the dual authority of the MSFCMA<sup>7</sup> and the Atlantic Tunas Convention Act (ATCA). In addition to domestic management, HMS must also be managed in an International context, in line with scientific information and management recommendations made by ICCAT. ICCAT recommendations are implemented in the US under the authority of ATCA. The MSFCMA complements other NOAA mandates that protect marine mammals and endangered marine life, including the Marine Mammal Protection Act (MMPA) and the Endangered Species Act (ESA).

There have been several amendments to the MSFCMA, since it was first enacted in 1976. The most recent version, Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006 which was authorized in 2007, includes seven purposes:

- 1 Acting to conserve fishery resources
- 2 Supporting enforcement of international fishing agreements
- 3 Promoting fishing in line with conservation principles
- 4 Providing for the implementation of fishery management plans (FMPs) which achieve optimal yield
- 5 Establishing Regional Fishery Management Councils to steward fishery resources through the preparation, monitoring, and revising of plans which (A) enable stake holders to participate in the administration of fisheries and (B) consider social and economic needs of states.
- 6 Developing underutilized fisheries
- 7 Protecting essential fish habitats

The law also calls for establishment of fishery information monitoring systems and reduction of bycatch (Magnuson-Stevens Fishery Conservation Act, Section 303).

National standard 1 (NS1) of the MSFCMA requires that conservation and management measures “prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the U.S. fishing industry”. FMPs developed under the MSFCMA must also specify “objective and measurable criteria” for determining when a fishery is overfished; if overfished NMFS must prepare an FMP “to end overfishing in the fishery and to rebuild affected stocks of fish” (NMFS, 1999). As a result, two “status determination criteria” are required for all species managed under the MSFCMA (including bycatch, incidentally caught and retained species);

- 1) to determine whether action needs to be taken to end “overfishing” of a fishery: the maximum fishing mortality rate threshold (MFMT);  
and/or
- 2) whether action is needed to rebuild fishery stocks: the minimum stock size threshold (MSST).

In summary, the thresholds/limit reference points used to calculate the status of Atlantic HMS, as described in the 1999 FMP and Amendment 1 to the Billfish FMP (NMFS, 1999), are:

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<sup>7</sup> Fishery Conservation and Management Act (16 U.S.C. 1801-1882 1976, P. L. 94-265), as amended by P.L.109-479.

- Maximum Fishing Mortality Threshold (MFMT) =  $F_{\text{limit}} = F_{\text{MSY}}$ ;
- Overfishing is occurring when  $F_{\text{year}} > F_{\text{MSY}}$ ;
- Minimum Stock Size Threshold (MSST) =  $B_{\text{limit}} = (1-M)B_{\text{MSY}}$  when  $M < 0.5 = 0.5B_{\text{MSY}}$
- Overfished when  $B_{\text{year}}/B_{\text{MSY}} < \text{MSST}$ ;  
where  $B_{\text{year}}/B_{\text{MSY}}$  is the biomass in the year being measured as a proportion of the biomass necessary to support maximum sustainable yield

NMFS target reference points are:

- Biomass target during rebuilding =  $B_{\text{MSY}}$ ;
- Fishing mortality during rebuilding  $< F_{\text{MSY}}$ ;
- Fishing mortality for healthy stocks =  $0.75F_{\text{MSY}}$ ;
- Biomass for healthy stocks =  $B_{\text{OY}} = \sim 1.25 \text{ to } 1.30B_{\text{MSY}}$ ;
- Minimum biomass flag =  $(1-M)B_{\text{OY}}$ ; and
- Level of certainty of at least 50 percent but depends on species and circumstances.
- For bluefin tuna, spawning stock biomass (SSB) is used as a proxy for biomass
- For sharks, in some cases, spawning stock fecundity (SSF) or spawning stock number (SSN) can be used as a proxy for biomass since biomass does not influence pup production in sharks.

According to NMFS, overfishing, therefore, occurs whenever a stock or stock complex is subjected to a rate or level (fishing mortality) that jeopardizes the capacity of a stock or stock complex to produce maximum sustainable yield on a continuing basis. Overfished is used by NMFS to describe any stock or stock complex whose size (biomass) is sufficiently small that a change in management practices is required in order to achieve an appropriate level and rate of rebuilding.

Under the MSFCMA, bycatch is defined as fish that are harvested in a fishery, but are not sold or kept for personal use, and includes economic discards and regulatory discards. Examples of fish included under this definition are Atlantic billfish species, caught and discarded by commercial fishing gear (even if tagged and released); undersized swordfish; bigeye and yellowfin tunas caught and discarded by commercial fishing, species such as blue shark for which there is little or no market, fish damaged by gear or lost prior to boarding, as well as prohibited shark species and large coastal shark (LCS) species which are released during a closure of that fishery. The definition does not include Atlantic HMS species that are not regulatory discards and that are tagged and released alive under scientific tag and release programs (NMFS, 2000). Under the MSFCMA, incidental catch is the catch of animals caught incidentally to fishing operations that may or may not be discarded, for example bluefin tuna, as well as marine mammals, sea turtles and seabirds.

NMFS initiated plans to address issues of bycatch of finfish and incidental catch of marine mammals and turtles in 1997 through development and publication of the 1999 HMS FMP, the 1999 Amendment to the 1988 Billfish FMP. In 1998, NMFS also developed a national bycatch plan (NMFS, 1998) with the goal of implementing conservation and management measures for living marine resources that will minimise, to the extent practicable, bycatch and mortality of bycatch that cannot be avoided. The strategy considers a combination of management measures in the domestic fishery, and if appropriate, multi-lateral measures recommended by international bodies such as ICCAT or coordination with Regional Fishery Management Councils or States (NMFS, 2010a). The bycatch in

each fishery is summarized annually in the Stock Assessment and Fishery Evaluation (SAFE) Report for Atlantic HMS fisheries (NMFS, 2006) and the effectiveness of plans and measures imposed are evaluated periodically.

In 2006 management of all Atlantic HMS were combined into a consolidated HMS FMP (NMFS, 2006). This and other amendments to the FMP have resulted in a number of bycatch reduction initiatives being required and now currently employed by commercial fisheries, including:

- Gear modifications (including hook and bait types)
- Circle hooks
- Time/area closures
- Effort reductions (i.e. Limited Access)
- Education and outreach
- Use of de-hooking devices

Considerable analysis and consultation with stakeholders is carried out in order to determine which measure/measures out of a suite of potential measures will be implemented in a Final Rule. Analyses include consideration of redistribution of effort from any closed area that might impact bycatch levels in areas which remain open; impacts on other species; and consideration of other environmental impacts (e.g. on habitat) and social impacts. In addition, the impacts of implemented measures are assessed periodically to determine their effectiveness.

For example, a number of pelagic longline time-area closures were implemented by NMFS in 2001 (August 1, 2000, 65 FR 47214<sup>8</sup>) in order to reduce bycatch of HMS and other species by PLL gear; these included the East Florida Coast closed area, the De Soto Canyon (GOM) and Charleston Bump, Northeastern US (Figure 9). The combined effects on bycatch of the individual area closures and other gear restrictions have been examined by NMFS by comparing reported catch and discards from 2005-2009 to the averages for 1997-1999 (NMFS, 2010a). Between these two periods, overall effort (i.e. reported number of hooks set) declined by 26.6 percent and declines were noted for both kept and discarded numbers of almost all species examined, including swordfish, tunas (see Section 3.4.2.3), sharks, billfish (see Section 3.4.2.4) and sea turtles. The exceptions were bluefin tuna and dolphinfish; catches of which increased between these two periods. Details of measures designed to minimise bycatch of particular species are detailed in the following sections under retained, bycatch (see Section 3.4.2.4) and ETP species (see Section 3.4.2.4).

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<sup>8</sup> Federal Register 2006 Rules and Regulations Vol. 71, No. 190: 58058-

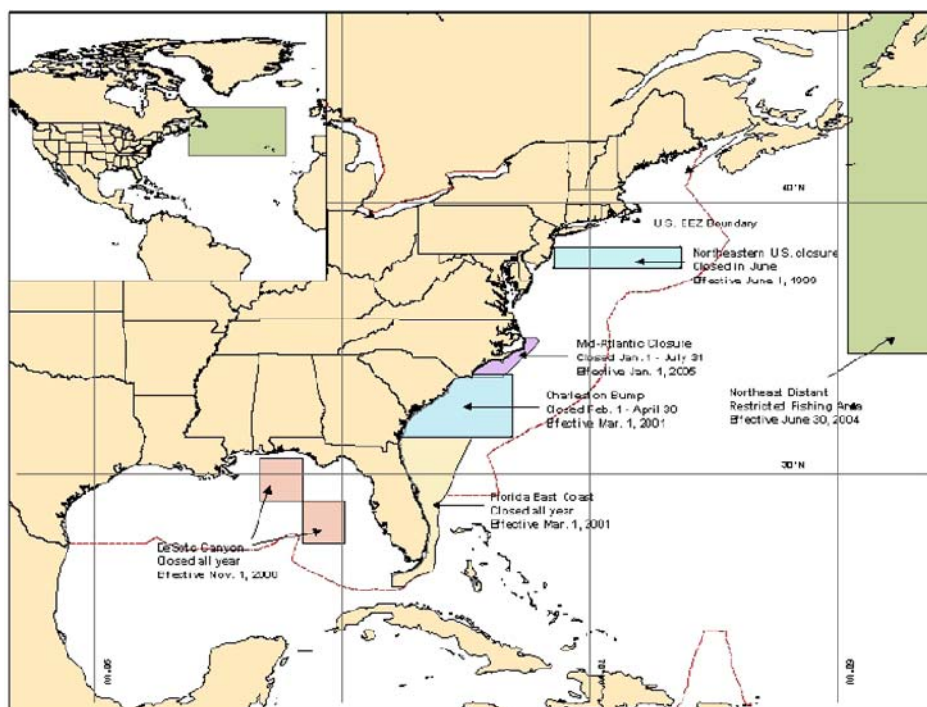


Figure 9 Areas of the North Atlantic closed to pelagic longline fishing by US fishermen (source: NMFS, 2009)

A National Working Group on Bycatch (NWGB) has also been established by NMFS in order to develop a national approach to standardised bycatch reporting methodologies and monitoring programmes. NMFS uses self-reported logbook data (Fisheries Logbook Systems or FLS), at sea observer data and other survey data (e.g., from recreational fisheries) to produce bycatch estimates in HMS fisheries.

Fishery logbook systems are mandatory and reporting rates are closely monitored and are generally high (Garrison, 2005). However, under-reporting is possible, which can lead to negative bias in bycatch estimates. To address this issue, logbooks are often used to provide effort information by which bycatch rates obtained from observers can be multiplied to estimate bycatch or total mortality estimates used for quota management of retained or no-take species. This is also the case for estimates made for protected species in the US Atlantic Pelagic longline fishery – catch per 1000 hooks for sea turtles and mammals are quantified based upon observer data by year, fishing area and quarter and then multiplied by the number of hooks reported under FLS in each area and quarter to obtain total estimates of interactions (Garrison, 2005).

### 3.4.2 Bycatch and retained catch

#### 3.4.2.1 Catch Information

Catch data for both the longline and handline buoy gear fisheries are available from three sources:

1. dressed weight in pounds landed from the fishery as recorded by dealers (Dealer Logbook System (DLS) data base)
2. number of fish and protected species caught in the pelagic fishery by region in the North Atlantic as recorded by fishermen in log books (Fisheries Logbook Systems (FLS) database)



3. numbers of species caught as recorded by observers deployed by the NMFS pelagic observer programme (POP database).

Under the FLS, skippers are required to record the numbers of swordfish and tuna, sharks, and 'other species' kept or thrown back, specifying whether fish thrown back were released alive or dead. Any species caught not listed on the forms must also be recorded. In addition, skippers are also required to report the numbers of protected species involved with the fishing gear during a trip providing details of the nature of the interaction e.g. hooked and/or entangled and whether individual animals were injured or killed.

The Pelagic Observer Program (POP) initiated in 1992 is directed by the SE Fisheries Science Center (SEFSC), and places observers aboard U.S. longline vessels that currently hold swordfish permits. The target observer coverage for the POP is 8% of total reported sets as of 2004 when a Biological Opinion (BiOp) for Atlantic pelagic longline for HMS was released (NMFS, 2004 (section 8.1.2.1); see Section 3.4.3.2); previously it was set at 5 percent as agreed by the U.S. at ICCAT (NOAA, 2011). This target annual observer coverage is randomly allocated amongst vessels based on fishing effort of the fleet from the preceding year, and calendar quarter in each of eleven statistical reporting areas (Beerkircher et al., 2002; NMFS, 2011). The statistical areas relevant to the fishery under certification are the Florida East Coast (FEC), South Atlantic Bight (SAB), Mid-Atlantic Bight (MAB), North-east Distant (NED), North-east Coastal (NEC), North Central Atlantic (NCA) and Sargasso (SAR).

The objectives of the POP are to:

- Obtain target and bycatch numbers on pelagic species caught on longline gear.
- Record length measurements and sex on all pelagic species brought on board.(swordfish, tunas, billfish, sharks, other finfish and protected species)
- Record detailed gear characteristics of commercial longline vessels.

The information collected is used by NMFS to evaluate harvest levels and the status of pelagic fish stocks as well as the effectiveness of management measures to control harvest levels. The target observer level has been met across all areas since 2009 (Table 4).

The POP's overarching goal, as mandated by the 2004 Biological Opinion for Sea Turtles, is to allocate observer effort to attempt to meet 8% in each stratum simultaneous to whatever special enhanced/experimental coverage happened to be occurring. The general sampling plan is based on calendar quarter and statistical area (e.g. FEC, SAB, GOM, etc.). Vessels are selected based on the previous year's logbook reports, such that the total number of sets by selected vessels in each area/quarter stratum, if each is covered for a single trip of average length, would result in at least 8% of the reported total fleet effort (in sets) for that stratum.

Table 4 Observer coverage<sup>9</sup> on all longline vessels fishing on the US East Coast between 2005 and 2011  
Source: FLS and POP data, SEFSC.

Year	% Hauls observed by Area				All Areas (in this table)
	FEC	MAB	NCA/SAR/NEC/NED	SAB	
2005	6.0%	7.3%	5.1%	8.8%	6.7%
2006	6.3%	5.4%	10.5%	7.0%	7.2%

<sup>9</sup> sum of observed hauls/hooks by year by area divided by sum of hauls/hooks by year by area expressed as a percentage. Note that not all areas covered by the POP are included in these tables.

Year	% Hauls observed by Area				All Areas (in this table)
	FEC	MAB	NCA/SAR/NEC/NED	SAB	
2007	9.4%	5.8%	7.4%	4.4%	6.3%
2008	7.7%	5.7%	10.7%	3.3%	6.6%
2009	8.4%	8.7%	13.9%	10.8%	10.0%
2010	6.1%	8.2%	13.6%	7.5%	8.4%
2011	7.4%	6.6%	14.4%	9.3%	9.0%
All Years	7.3%	6.7%	10.9%	7.2%	7.9%

Year	% Hooks observed by Area				All Areas (in this table)
	FEC	MAB	NCA/SAR/NEC/NED	SAB	
2005	6.1%	8.1%	5.6%	9.4%	7.1%
2006	7.5%	6.0%	10.8%	5.9%	7.7%
2007	12.5%	7.6%	7.5%	4.3%	7.4%
2008	7.7%	6.3%	10.7%	3.1%	6.9%
2009	9.5%	8.9%	14.9%	11.6%	11.0%
2010	6.1%	9.1%	13.7%	7.4%	9.0%
2011	6.9%	6.7%	13.9%	8.7%	8.9%
All Years	7.7%	7.5%	11.1%	7.2%	8.4%

No US government observer program has examined the discards from hand line buoy gear. However, a study by Nova Southeastern University observing approximately 60 buoy gear vessels from 2007-2009, found that the gear caught small amounts of fish other than swordfish and that the mortality of released fish was very low (David Kerstetter, Ph.D. Nova Southeastern University. Pers. Comm. August 2010). These observations are consistent with the dealer reports of swordfish comprising more than 92% of the retained catch in the buoy gear fishery (Figure 12). Kerstetter further reports that his observations of the rod and reel (deep drop) component of the hand line buoy gear catch also has a high proportion of swordfish in the total catch and a high survival of discarded fish (David Kerstetter, Ph.D., Nova Southeastern University, pers. comm. March 2011).

### 3.4.2.2 Catch composition of fishery under assessment

#### Pelagic longline

The pelagic longline fishery primarily targets swordfish, yellowfin tuna and bigeye tuna, and these three species comprise the largest proportion of the catch both by weight and by numbers (Table 5 and Figure 10) (NMFS, 2011). In addition to these three species, a great variety of other pelagic species are caught in comparatively small proportions, including various tuna species (e.g. albacore, Atlantic bluefin tuna, blackfin tuna), several different species of large coastal sharks (e.g., tiger, silky, dusky, hammerhead sharks), a number of pelagic shark species (e.g. blue, oceanic whitetip, thresher sharks) and other pelagic finfish species (e.g., dolphinfish, wahoo, escolar/oilfish).

Figure 10 illustrates composition by weight (lbs) of landed pelagic longline catch from vessels fishing within the area covered by the unit of certification between 2005 and 2011(DLS data) and Figure 11 illustrates composition pooled across this time period for each of the statistical areas covered by the unit of certification. Table 8 lists the total numbers of species reported and observed caught and percentage of species caught and discarded by number as recorded by observers (POP data) during the same period.

Between 2005 and 2011, 78 different pelagic fish species (including 36 shark species, 8 tuna species, 5 billfish species and 29 other finfish species) were observed and recorded by observers deployed on client group vessels fishing in the FEC, MAB, NCA/SAR/NEC/NED, and SAB (POP data, NMFS). Out of these 78 species, five comprised 75 percent of the catch composition by number (according to observer data from ~6% coverage of hooks set and total catch data recorded by vessels) – swordfish, blue shark, dolphinfish (or mahi mahi), yellowfin and bigeye tuna. Table 5 summarises the observed fate of fish and other species caught by species group (POP data) and corresponding total catch numbers reported by vessels between 2005 and 2011. Table 6 summarises species group as a proportion of total observed catch for the different geographical areas covered by the unit of certification.

According to observations made by pelagic observers deployed on vessels fishing in these areas, 21 percent of sharks and rays and 33 percent of billfish species were discarded dead between 2005 and 2011 (Table 5). Eighty percent of all tuna and other finfish species caught were retained and 13 and 11 percent respectively were discarded dead during this period (Table 5). Tuna comprised a greater proportion of the observed catch in the MAB than in other areas, and sharks and rays comprised greater proportion of total observed catch in the MAB and NCA/SAR/NEC/NED (Table 6) compared with the FEC and the SAB.

Table 5 Total number of fish caught by pelagic longline by vessels fishing within area of certification and percentage fate of fish as reported by pelagic observers on board these vessels (from 2005-11 data). Source: FLS and POP data, SEFSC

Species group	Observed (POP data)				Reported numbers caught (FLS data)
	% retained	% discarded dead	% discarded alive	% lost/ unknown	
<b>swordfish</b>	69.3	20.7	8.7	1.3	273,343
<b>tuna</b>	80.3	13.1	5.5	1.0	287,033
<b>sharks and rays</b>	4.4	21.1	72.5	2.3	277,225
<b>billfish</b>	0.3	32.9	62.7	3.7	6,214
<b>other finfish sp</b>	79.8	10.8	6.1	3.2	259,719
<b>marine mammals</b>	0.0	4.0	86.5	9.5	-
<b>turtles</b>	0.0	0.9	90.5	8.4	-
<b>seabirds</b>	0.0	88.5	11.5	0.0	-

Table 6 Species group as a percentage of total observed catch (POP data) for each of the statistical areas separately and combined (all areas) covered by the unit of certification

Species group	Observed Percentage of catch (POP data)				
	FEC	MAB	NCA / SAR / NEC / NED	SAB	All areas
<b>swordfish</b>	26.47	17.93	23.27	33.94	24.27
<b>tuna</b>	31.70	42.18	16.03	5.53	23.36
<b>sharks and rays</b>	15.94	30.15	53.42	16.15	34.70
<b>billfish</b>	7.12	1.59	1.45	1.82	2.29
<b>other finfish spe</b>	18.49	7.59	5.14	42.43	14.88
<b>marine mammals</b>	0.01	0.29	0.05	0.02	0.10
<b>turtles</b>	0.27	0.20	0.65	0.11	0.37
<b>seabirds</b>	0.00	0.06	0.01	0.01	0.02

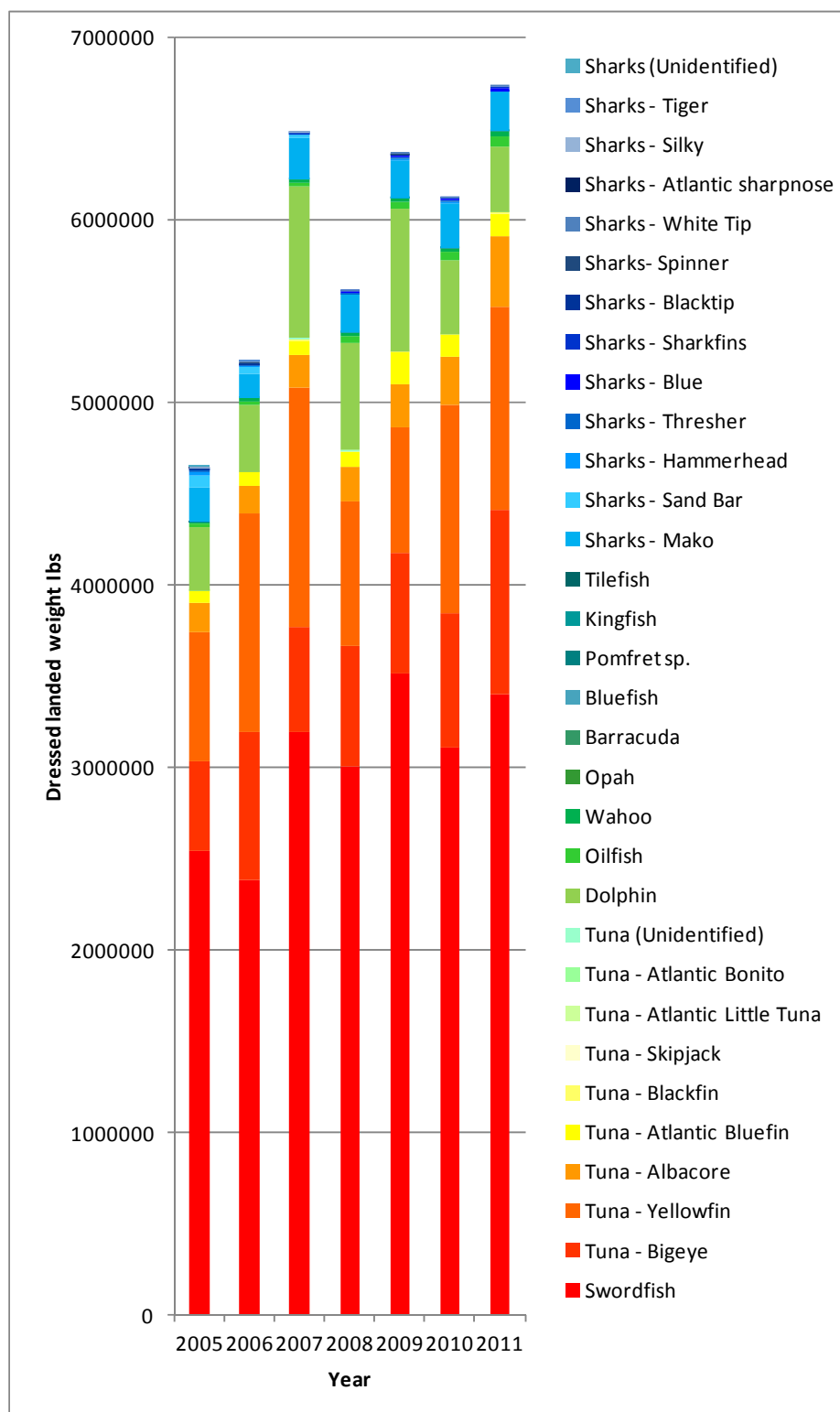


Figure 10 Dressed landed catch weight (lbs) composition for all vessels by year between 2005 and 2011.  
Source: DLS data, SEFSC.

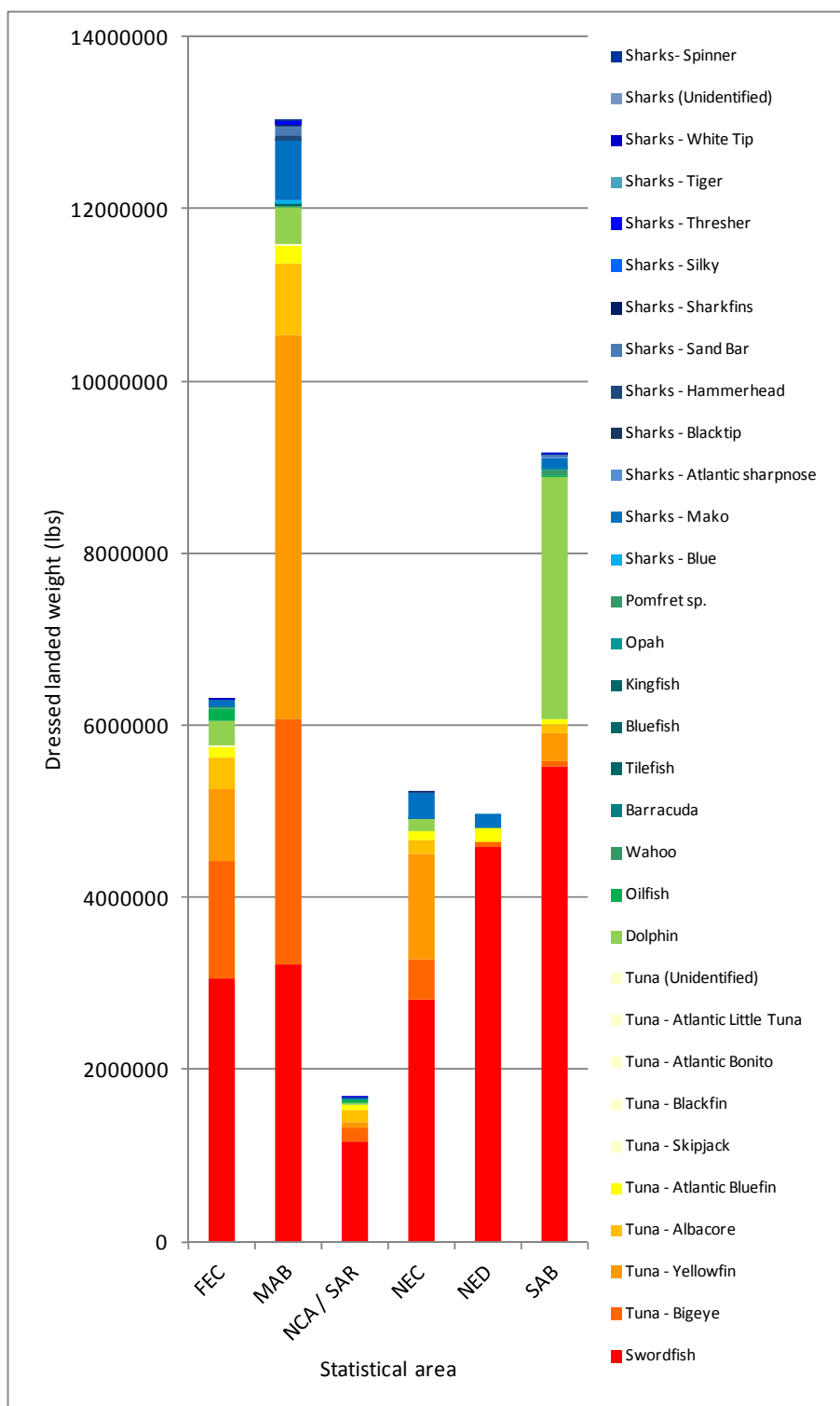


Figure 11 Dressed landed catch weight (lbs) composition for all vessels (pooled for years 2005- 2011) by statistical area covered by the unit of certification. Source: DLS data, SEFSC

Table 7 Dressed landed catch weight (lbs) for all species reported by all vessels (pooled for years 2005- 2011 and across all areas) and corresponding percentage of total landed weight.

SPECIES	Total weight (lbs)	% of total landed weight
Swordfish	21,151,372	51.40
Tuna - Yellowfin	6,939,970	16.87
Tuna - Bigeye	4,939,805	12.00
Dolphinfish	3,686,338	8.96
Tuna - Albacore	1,563,467	3.80
Sharks - Mako	1,420,402	3.45
Tuna - Atlantic Bluefin	722,678	1.76
Oilfish	224,578	0.55
Wahoo	125,736	0.31
Sharks - Sand Bar	116,064	0.28
Sharks - Hammerhead	56,389	0.14
Sharks - Thresher	48,641	0.12
Sharks - Blue	39,154	0.10
Tuna - Blackfin	24,490	0.06
Sharks - Sharkfins	21,506	0.05
Sharks - Blacktip	15,743	0.04
Tuna (Unidentified)	11,403	0.03
Sharks- Spinner	8,041	0.02
Sharks - White Tip	7,365	0.03
Sharks - Atlantic sharpnose	5,779	0.01
Sharks - Silky	4,583	0.01
Opah	3,870	0.009
Barracuda	3,672	0.009
Bluefish	2,824	0.007
Tuna - Skipjack	1,364	0.003
Sharks - Tiger	1,248	0.003
Pomfret sp.	616	0.001
Tuna - Atlantic Little Tuna	331	0.001
Sharks (Unidentified)	300	0.0007
Kingfish	274	0.0006
Tuna - Atlantic Bonito	259	0.0006
Tilefish	111	0.0003

Table 8 Total reported (FLS) and observed (POP) catch numbers of all species and percentage discards for all vessels fishing across all areas covered by the unit of certification, 2005-11. Source: FLS and POP data, SEFSC

Common name	FLS	POP Data			
	Total reported numbers	Total observed numbers	% of total catch by numbers	% of catch discarded	% total discards, discarded dead
swordfish	273343	29139	24.20	29.42	70.51
<b>tuna</b>					
albacore	38386	4755	3.95	9.04	92.79
bigeye	77119	7498	6.23	12.48	60.79
blackfin	2217	492	0.41	74.39	84.70
bluefin	7753	1210	1.00	81.16	52.44
bonito	218	6	0.004	100.0	66.67
little tunny	nr	8	0.007	100.00	87.50
skipjack	617	125	0.10	82.40	86.41
tuna	8	377	0.31	89.39	92.28
yellowfin	160715	13567	11.27	15.26	71.59
<b>billfish</b>					
billfish		169	0.14	82.25	28.78
marlin blue	1728	580	0.48	97.93	28.87
marlin white	2922	705	0.59	98.30	36.51
sailfish atlantic	871	370	0.3	97.84	33.43
spearfish longbill	693	18	0.01	94.44	35.29
spearfish roundscale	nr	349	0.29	98.28	69.10
spearfish spp.	nr	38	0.03	97.37	2.70
white marlin/roundscale spearfish	nr	525	0.44	90.48	17.68
<b>sharks and rays</b>					
Atlantic sharpnose	nr	47	0.04	68.09	90.63
basking	nr	3	0.002	100.00	33.33
bignose	79	5	0.004	100.00	60.00
blacknose	nr	1	0.001	100.00	100.00
blacktip	802	5	0.004	100.00	80.00
blue	208391	25936	21.54	97.98	18.08
bull	nr	1	0.001	100.00	0
dogfish	nr	2	0.002	100.00	100.00
smooth dogfish	nr	52	0.04	51.92	11.11
spiney dogfish	nr	38	0.03	100.00	5.26
dusky	4365	290	0.24	99.31	28.13
great hammerhead	nr	7	0.006	85.71	33.33
hammerhead spp	6979	70	0.06	98.57	44.93
scalloped hammerhead	nr	864	0.72	93.06	46.39
smooth hammerhead	nr	14	0.01	64.29	33.33
mako spp	nr	55	0.05	70.91	46.15
longfin mako	1378	111	0.09	96.40	52.34
shortfin mako	23376	2553	2.12	32.24	27.83
night	3604	1109	0.92	99.73	70.16
nurse	nr	2	0.002	100.00	0
porbeagle	2310	216	0.18	96.30	30.77
ray manta	nr	707	0.59	98.73	1.86
pelagic ray	nr	4970	4.13	99.28	25.66
rays/skates	nr	24	0.02	79.17	0
sand tiger	nr	1	0.0008	100.00	0
sandbar	6993	254	0.21	75.98	24.87
shark (Unidentified)	nr	458	0.38	91.48	21.00
shark crocodile	nr	2	0.002	100.00	100.00
shark requiem	nr	663	0.55	97.13	29.35
whale shark	nr	1	0.001	100.00	0
sharpnose sevengill	nr	1	0.001	100.00	0
silky	6639	1359	1.13	96.62	46.15
spinner	nr	8	0.007	87.5	57.14

Common name	FLS	POP Data			
	Total reported numbers	Total observed numbers	% of total catch by numbers	% of catch discarded	% total discards, discarded dead
Thresher	826	93	0.08	100.00	56.99
thresher bigeye	1929	283	0.23	98.94	56.07
thresher common	8867	47	0.04	78.72	40.54
Tiger	nr	1296	1.08	98.15	4.64
whitetip oceanic	626	110	0.09	84.55	22.58
white	61	n.o.	-	-	-
<b>other finfish</b>					
banded rudderfish	3	1	0.001	100.00	100
barracuda	nr	224	0.19	86.16	12.44
blue runner	nr	1	0.001	100.00	0
bluefish	nr	110	0.09	29.09	50.00
blueline tilefish	nr	7	0.01	14.29	100.00
cigarfish spp	nr	11	0.01	63.64	57.14
dolphinfish	250328	14092	11.70	2.44	0
escolar	6082	933	0.77	32.15	54.00
goosefish	nr	2	0.002	100.00	100.00
jack spp	nr	1	0.001	100.00	0
lancetfish spp	18	1137	0.94	98.42	92.05
mackerel king	34	10	0.01	20.00	100.00
makeral snake	730	163	0.14	97.55	86.79
oilfish	nr	482	0.40	88.59	42.62
opah	nr	4	0.003	0	-
pilotfish	nr	1	0.001	100.00	100.00
pomfret spp	nr	95	0.08	82.11	67.95
puffer spp	nr	114	0.09	98.25	9.82
rainbow runner	nr	3	0.002	66.67	50.00
remora	nr	27	0.02	100.00	0
shark mackerel	nr	4	0.003	100.00	50.00
sunfish ocean	nr	78	0.06	100.00	0
sunfish sharptail	nr	30	0.02	100.00	3.33
sunfish spp	nr	68	0.06	98.53	1.49
tripletail	nr	4	0.003	100.00	100.00
wahoo	2524	261	0.22	11.49	100.00
warsaw grouper	nr	2	0.002	50.00	100.00
<b>marine mammals</b>					
Atlantic spotted dolphin	nr	1	0.00083	100.00	0
bottlenose dolphin	nr	8	0.01	100.00	0
common dolphin	nr	1	0.001	100.00	100.00
dolphin rissos	nr	20	0.02	90.00	0
dolphin spp	nr	14092	11.70	2.44	75.87
marine mammal	nr	9	0.01	88.89	12.50
pilot whale	nr	77	0.06	90.91	4.29
pilot whale longfin	nr	4	0.003	75.00	0
pilot whale shortfin	nr	2	0.002	50.00	0
whale false killer	nr	1	0.001	100.00	0
whale minke	nr	1	0.001	100.00	0
whale pygmy sperm	nr	1	0.001	100.00	0
whale, beaked	nr	1	0.001	100.00	0
<b>marine turtles</b>					
kemps ridley	nr	1	0.001	0	-
leatherback	nr	140	0.12	87.14	2.46
loggerhead	nr	301	0.25	94.02	0.35
turtle	nr	1	0.001	0	-
<b>seabirds</b>					
gannet northern	nr	4	0.003	100	50.00
gull	nr	1	0.001	100	100.00
gull black backed	nr	6	0.005	100	100.00
gull herring	nr	5	0.004	100	100.00
seabird	nr	2	0.002	100	100.00
shearwater corys	nr	1	0.001	100	100.00



Common name	FLS	POP Data			
	Total reported numbers	Total observed numbers	% of total catch by numbers	% of catch discarded	% total discards, discarded dead
shearwater greater	nr	6	0.005	100	100.00
shearwater spp	nr	1	0.001	100	0

Table 9 Total reported (FLS) catch numbers of all species and percentage discards for all vessels fishing across all areas covered by the unit of certification between 2005-11.

SPECIES	Total reported catch numbers	% total catch by numbers	% numbers kept	% numbers discarded	% discard numbers, discarded dead
<b>swordfish</b>	273343	24.76473578	85.28589	14.71411	51.87469
<b>tuna</b>					
albacore_tuna	38386	3.477751937	98.13474	1.865263	50.83799
bigeye_tuna	77119	6.986941896	97.34436	2.655636	37.45117
blackfin_tuna	2217	0.200859064	82.99504	17.00496	38.72679
bluefin_tuna	7753	0.702417829	15.10383	84.89617	25.90398
bonito	218	0.019750688	64.22018	35.77982	28.20513
skipjack	617	0.055899884	45.05673	54.94327	46.90265
yellowfin_tuna	160715	14.56069667	97.38543	2.614566	44.05045
other_tuna	8	0.000724796	62.5	37.5	100
<b>sharks</b>					
bignose	79	0.00715736	3.797468	96.20253	11.84211
blacktip	802	0.072660789	33.54115	66.45885	31.70732
blue_shark	208391	18.88011785	0.694368	99.30563	10.52362
dusky	4365	0.395466764	0.045819	99.95418	6.784323
hammerhead	6979	0.632293825	16.10546	83.89454	27.29291
hammerhead_scalloped	not reported				
hammerhead_smooth	not reported				
mako_longfin	1378	0.124846094	5.007257	94.99274	17.95264
mako_shortfin	23376	2.117853626	75.02995	24.97005	12.16378
night	3604	0.326520554	0	100	47.19756
oceanic_whitetip	626	0.056715279	36.74121	63.25879	9.848485
porbeagle	2310	0.209284817	1.991342	98.00866	13.38339
sandbar	6993	0.633562218	46.58945	53.41055	19.86613
silky	6639	0.601489999	18.93357	81.06643	34.11371
spinner	730	0.066137626	38.35616	61.64384	15.11111
thresher	826	0.074835177	32.92978	67.07022	20.39711
thresher_bigeye	1929	0.174766412	0.414723	99.58528	18.01145
tiger	8867	0.803345658	1.578888	98.42111	2.601123
white	61	0.005526569	1.639344	98.36066	25
<b>billfish</b>					
blue_marlin	1728	0.156555915	0	100	13.31019
sailfish	871	0.078912154	0	100	22.8473
spearfish	693	0.062785445	0.4329	99.5671	26.52174
white_marlin	2922	0.264731703	0.034223	99.96578	19.27422
<b>finfish</b>					
banded_rudderfish	3	0.000271798	0	100	0
dolphin	250328	22.67958857	99.05764	0.942364	56.88851
escolar	6082	0.551026084	92.78198	7.21802	28.4738
greater_amberjack	18	0.001630791	33.33333	66.66667	75
king_mackerel	34	0.003080383	91.17647	8.823529	66.66667
wahoo	2524	0.228673107	95.48336	4.51664	83.33333
other_species	225	0.020384885	22.66667	77.33333	17.24138

### Handgear buoy line

Buoy gear is significantly more selective than pelagic longline gear with data indicating greater than 92% of the catch comprised of swordfish (Figure 12). This gear is currently only used within the FEC.

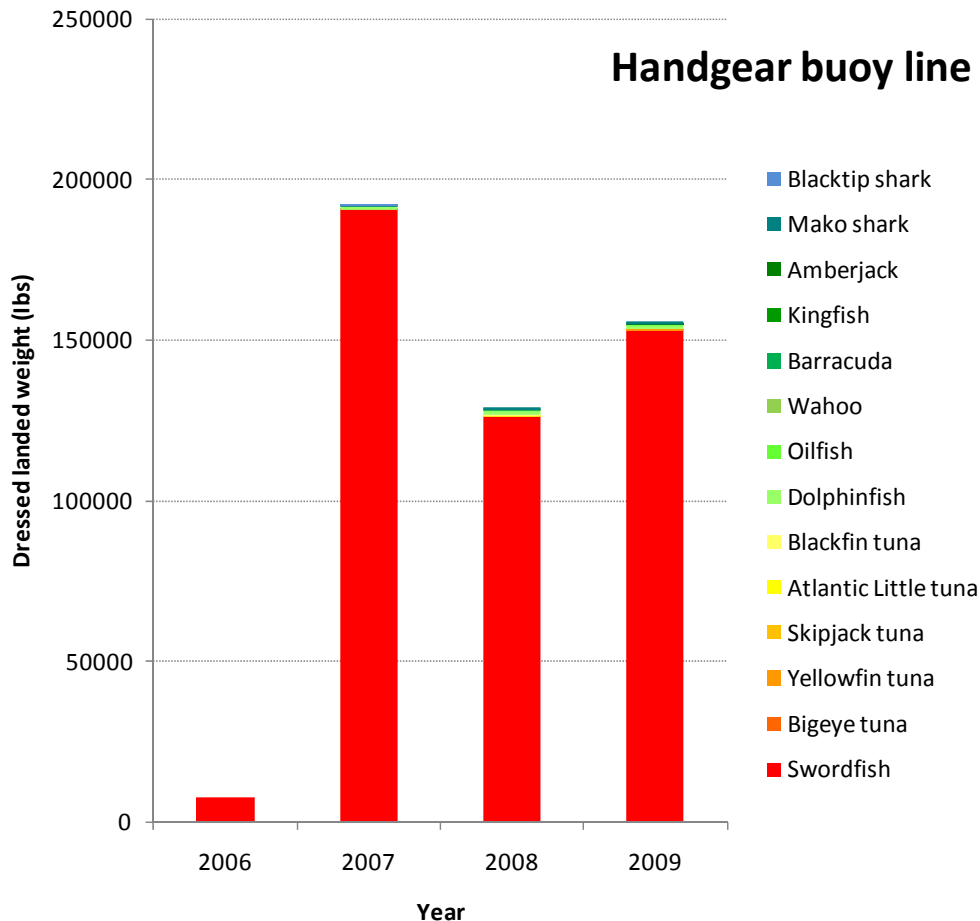


Figure 12 Dressed landed catch weight (lbs) composition for handline buoy gear vessels from the FEC area between 2006-2009 (DLS)

A comparison of data reported by vessels and observers shows some inconsistencies, primarily with respect to the numbers of species reported and the fate or release/discard condition of catch numbers (Table 8, Figure 11). For example, fewer species were recorded in vessel logbooks (FLS data, NMFS) during 2005-09 than in observer logbooks for the same period (e.g. 12 versus 17 shark species, and 3 versus 12 other finfish species) (Table 8). A greater proportion of sharks, billfish and other finfish species were reported as dead discards in POP data compared with FLS data between 2005 and 2009 (Figure 11). However, more detailed analysis would be required to determine whether this was a factor of observer coverage levels rather than reporting quality. Biases in the FLS data might result from less accurate recording of non-commercial or damaged fish which are discarded. The observer data are deemed to be of sufficient coverage by NOAA to provide precision required to monitor bycatch species (CV of 30%). Nevertheless, discrepancies with FLS data increase the level of uncertainty with respect to unobserved vessels.

### 3.4.2.3 Main retained species

Main retained species were selected using the following criteria:

1. All species which represent >20% catch by weight (DLS) were automatically considered to be main retained species

2. All species which represent >5% catch by weight (DLS) and for which 50% of numbers caught are retained (FLS data)
3. Other species for which >50% of numbers caught are retained (FLS data) were selected as main retained species if they were also:
  - a. NMFS overfished/overfishing and/or IUCN vulnerable status species which also represent >1% of catch by weight (DLS data)
  - b. high value species which also represent >1% of catch by weight (DLS data) OR NMFS overfished/overfishing and/or IUCN vulnerable status

This process was carried out separately for data from each of the statistical areas covered by the unit of certification and with all data combined to explore different exploitation patterns across the whole area and between different areas within the unit of certification.–Table 10 illustrates the selection process for all areas combined.

Table 10 Criteria for selection of main retained species across all statistical areas in the fishery under assessment

Order	Selection criteria	ALB	BET	BFT	YFT	DOD	MAK
1	Species constituting >20% total landed catch						
2	Species constituting >5% total landed catch		✓		✓	✓	
3	>50% numbers caught retained	✓	✓		✓	✓	✓
3a	vulnerable species	✓	✓	✓			✓
3b	>1% of catch	✓	✓	✓		✓	✓
4	high value species		✓	✓	✓		

There are no main retained species for the handgear buoy line fishery (See catch summary in Figure 12).

Table 11 summarizes the species to be considered under the assessment as main retained species and the key criteria on which this selection was based. The following text provides summaries of stock status and management regimes relevant to each species. In addition to these species, species used as bait in the pelagic longline and handgear buoy line fishery must also be considered as retained species (MSC Certification Requirements v1.2). ). The US North Atlantic pelagic longline fisheries uses about 1500 tons of squid and 500 tons of Atlantic mackerel (*Scomber scombrus*) annually. Depending on availability and price, the squid will come from the NE US squid (*Illex illecebrosus*) or the Southwest Atlantic squid (*Illex argentinus*). The bait usage is such a small proportion of the quotas for these species that the Assessment team considered them as minor species and did not score them. The US 2012 quota for Atlantic mackerel is about 33,800 mt, of which the bait use represents about 1.5%. The US 2012 quota for *Illex* squid in the northeast is about 22,900 mt, of which bait use (if it all came from the US fishery) represents about 6%. The southwest Atlantic squid fishery, consisting of harvest in the EEZs of Argentina, Uruguay, and the Falkland Islands and in international waters, exceeds 200,000 mt (about 250,000 mt in 2012); if all squid used as bait in the fishery came from the Southwest Atlantic it would represent less than 1% of the harvest.

### Atlantic Mackerel (bait)

Atlantic mackerel, *Scomber scombrus*, is a fast swimming, pelagic, schooling species distributed in the Northwest Atlantic between Labrador and North Carolina. There are two major spawning components in the population: a southern group that spawns primarily in the Mid-Atlantic Bight

during April and May, and a northern group that spawns in the Gulf of St. Lawrence in June and July. Both groups winter between Sable Island (off Nova Scotia) and Cape Hatteras in waters generally warmer than 7°C (45°F), with extensive northerly (spring) and southerly (autumn) migrations to and from spawning and summering grounds. The two groups are managed as a unit stock. Maximum observed size in recent years is about 42 cm (16.5 in) in length and 1.0 kg (2.2 lb) in weight. Sexual maturity begins at age 2 and is usually complete by age 3. Maximum age is about 20 years.

USA commercial landings averaged 2,368 mt from 1960 to 1983, but peaked at 31,261 mt in 1990 before declining to 4,666 mt in 1993. Annual commercial landings averaged 23,673 mt during 1994-2008, with a record-high of 56,640 mt in 2006. Landings from 2005-2008 averaged 37,000 mt. Commercial discards have been estimated since 1989, and constitute a small fraction of the catch. Canadian landings increased from 13,383 metric tons in 2000 to 54,270 metric tons in 2005. In 2010, estimated U.S. and Canadian landings declined to 10,669 metric tons and 35,093 metric tons, respectively. The U.S. fishery is managed using annual quotas under the Mid-Atlantic Fishery Management Council's Atlantic Mackerel, Squid, and Butterfish Fishery Management Plan.

Fishing mortality (ages 4-6) was high during 1969-1975, peaking at 0.54 in 1975, and then sharply declined to 0.05 in 1978 followed by a very low and stable period during 1979-1986. Fishing mortality increased very slightly in 1988 to 0.09, (coincident with the joint venture (JV) fishery that operated for several years), and then declined and has since been below 0.06. Spawning biomass peaked in 1972 at 1.7 million mt, declined until 1976, and has increased thereafter reaching a record high of 2.3 million mt in 2003-2004. Recruitment ranged between 0.1-5.8 billion fish during 1962-2004 and averaged 1.1 billion fish. Three large year-classes were produced during this period, the 1967, 1982, and 1999 cohorts. The 2003 and 2004 cohorts appear to be above average but their magnitude is still uncertain.

MSY reference points were estimated in the 2005 assessment and  $MSY = 89,000$  mt,  $SSB_{msy} = 644,000$  mt, and  $F_{msy} = 0.16$  (NEFSC, 2006). Fishing mortality has remained very low (below  $F=0.06$ ) since 1992. However, NMFS has determined that the uncertainty in the 2005 stock assessment is too high to provide good reference points and the status of the resource is uncertain.

### **Northern shortfin squid (bait)**

The northern shortfin squid, is a highly migratory, transboundary species that is distributed in the Northwest Atlantic Ocean from the Florida Straits to Newfoundland (Dawe and Hendrickson 1998). The northern component of the stock, extending from Newfoundland to the southern Scotian Shelf, is assessed annually and managed by the Northwest Atlantic Fisheries Organization (NAFO) based on a total allowable catch (TAC). The southern and U.S. stock component, extending from the Gulf of Maine to Florida, has been managed since 1977 by the Mid-Atlantic Fishery Management Council (MAFMC), based on an annual TAC, under the provisions of the Atlantic Mackerel, Squid, and Butterfish Fishery Management Plan FMP (MAFMC, 1998).

Spawning occurs throughout most of the year but *I. illecebrosus* is semelparous and fishing mortality and spawning mortality occur simultaneously on the U.S. shelf (Hendrickson and Hart 2006). This makes the species vulnerable to recruitment overfishing. Annual survey indices of relative abundance and biomass and average body size suggest that the stock has experienced both low and high productivity periods (NEFSC, 2006).

Amendment 8 (MAFMC, 1998) of the FMP specifies  $B_{MSY}$  as 39,300 mt,  $MSY$  as 24,000 mt, and  $F_{MSY}$  as 1.22 per year. However, these reference points were derived from a biomass dynamics model that does not account for the species semelparous life history or adequate spawning escapement, and

therefore, should be treated with caution. Amendment 8 revised the definition of overfishing for *Illex* to bring the FMP into compliance with new and revised National Standards (MSFCMA) and other required provisions of the SFA and a framework for adjustment procedures was added. Overfishing for *Illex* will be defined to occur when the catch associated with a threshold fishing mortality rate of  $F_{MSY}$  is exceeded. Annual specifications are instituted which correspond to a target fishing mortality rate of 75% of  $F_{MSY}$ . Maximum OY will be specified as the catch associated with a fishing mortality rate of  $F_{MSY}$ . In addition, the biomass target is specified to equal  $B_{MSY}$ . The minimum biomass threshold is specified as  $\frac{1}{2} B_{MSY}$ . According to regulations, closure of the directed fishery occurs when 95% of the quota has been landed and at that time, a trip limit of 4.5 mt (10,000 lbs) takes effect. Access into the fishery has been limited since 1996 and in 1997 a mechanism for seasonal management was introduced to improve yield per recruit (MAMFC<sup>10</sup>).

*I. illecebrosus* was last assessed in November 2005 (NEFSC, 2006). An in-season stock assessment model was developed but the results were considered preliminary because seasonal data were needed to further test the model. As a result, stock status could not be determined because estimates of fishing mortality and stock biomass were not available. Additional data on seasonal age, growth and maturity are required in order to improve the assessment of this species. Nevertheless, the stock is not thought to be in immediate danger of being overfished. The fishery has a long history or prosecution without any trend in biomass. Available information suggests that it is highly likely to be within biological limits. In addition, the quantity of shortfin squid used by client vessels is only a small fraction of the TAC.

### **Argentine Squid (bait)**

Argentine squid (*Illex argentinus*) is managed by Argentina, Uruguay, and the Falkland Islands in their EEZs, but harvest occurs also in international waters. The harvest is not well coordinated among the countries participating in the fishery. Argentina and the Falklands conduct surveys of squid abundance during the season, and have criteria for closing the fishery when certain conditions are met. The stock of squid migrates between the Falklands and the Argentina-Uruguay zones and face sequential fishing pressure.

Up to date information is not readily available. Reviews of the fishery are out of date. News reports, unconfirmed by official statistics, indicate relatively low catches for 2010 and 2011, but substantially increased catches for 2012. Argentina reported catches of nearly 250,000 tons from around its EEZ in 2012. (Brunetti, N. E; Rossi, R. G., and Mc Innes, M. G. 2012. *Illex argentinus*. Fisheries 2012. Final Report of the Season. Official Technical Report No. 29. 30/10/2012. 27 p.

<http://www.inidep.gob.ar/publicaciones/catalogo-2/informes-tecnicos-2012/>)

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<sup>10</sup> <http://www.mafmc.org/fmp/history/smb-hist.htm>

Table 11 Main retained species and criteria used for their selection.

Species name	% of landed catch by weight (DLS)							Total numbers caught (FLS)							% of catch numbers retained (FLS)							US Status 2012 ( from NMFS, 2012 Map of overfished and overfishing stocks, Q2 June 2012)	IUCN status (Source: <a href="http://www.iucnredlist.org/">http://www.iucnredlist.org/</a> )	Selection criteria
	FEC	MAB	NCA & SAR	NEC	NED	SAB	All Areas	FEC	MAB	NCA & SAR	NEC	NED	SAB	All Areas	FEC	MAB	NCA & SAR	NEC	NED	SAB	All Areas			
Albacore tuna ( <i>T. alalunga</i> )	5.59	6.34	8.92	2.79	0.06	0.94	4.11	8525	21397	3202	3245	91	1926	38386	99.1	97.62	97.85	99.38	96.70	98.13	98.13	overfished; overfishing occurring	Near Threatened (2011)	Vulnerability
Atlantic bluefin tuna ( <i>T. thynnus</i> )	2.08	1.60	2.95	2.25	3.02	0.72	4.11	275	5042	169	1538	629	100	7753	64.7	5.73	50.30	8.00	69.00	62.00	15.10	overfished; overfishing occurring	Endangered (2011)	Value & Vulnerability
Bigeye tuna ( <i>T. obesus</i> )	21.56	21.95	9.10	8.66	1.17	0.61	10.51	30216	37241	2685	5498	536	943	77119	96.00	98.84	1.78	98.85	97.01	93.74	97.34	not overfished, overfishing not occurring	Vulnerable (2011)	Catch quantity
Dolphinfish ( <i>C. hippurus</i> )	4.46	3.23	1.49	2.52	0.07	30.83	7.10	15367	32142	1681	9444	248	191446	250328	98.8	99.07	97.74	99.27	93.55	99.08	99.06	not overfished	Least Concern (2011)	Catch quantity
Shortfin mako ( <i>I. paucus</i> ) (PS)	1.25	5.36	1.45	5.83	3.49	1.51	3.15	396	10837	198	4542	6525	878	23376	85.9	91.03	86.36	85.91	37.93	89.52	75.03	not overfished; overfishing occurring	Vulnerable (2009)	Vulnerability
Yellowfin tuna ( <i>T. albacares</i> )	13.37	34.22	3.83	23.66	0.09	3.64	13.13	13240	112978	1078	25517	45	7857	160715	96.9	97.53	95.18	96.74	97.78	98.52	97.39	not overfished, overfishing not occurring	Near Threatened (2011)	Catch quantity

## US catches and management of bigeye, yellowfin, albacore, and bluefin tuna.

Table 12 provides a summary of recent (2010) landings of the main tuna species in US Atlantic fisheries compared to 2009, and also the landings specifically by the US pelagic longline fleet in 2010 compared to 2003.

Table 12 Summary of landings of the main tuna species in US Atlantic fisheries (NMFS 2011a, NOAA 2011a)

Species	total U.S. landings 2009	total U.S. landings 2010	U.S. PLL vessels in the NW Atlantic 2003	U.S. PLL vessels in the NW Atlantic 2010
Bigeye	516	673	169	528
Yellowfin	2,788	2,648 <sup>1</sup>	275	745
Albacore	188	328	93	165
Bluefin	1228 <sup>2</sup>	925 <sup>2</sup>	36	139 <sup>3</sup>

<sup>1</sup> 1,109 MT from rod and reel catches of recreational anglers in the NW Atlantic

<sup>2</sup> U.S. vessels fishing in the northwest Atlantic (including GOM)

<sup>3</sup> landings and estimated dead discards from observer data

Due to trip limits on Atlantic bluefin tuna, 85% of numbers caught are reported discarded (FLS data). In 2010, 392 bluefin tuna were landed and 1,488 were discarded in the U.S Atlantic PLL fishery; the greatest proportion (87%) of discards were in the MAB and NEC (NMFS, 2011). According to the FLS data, a high proportion (>90%) of bigeye, yellowfin, and albacore tuna catches are retained by the fishery under assessment. Although only a small proportion of these species are discarded, relatively high proportions (>60% according to POP data (Table 8) and >~35% according to FLS data) of these discarded fish are discarded dead.

Domestic management of species covered by the HMS FMP presents several challenges considering the overfished status of many of these stocks and the number of different countries fishing for them (NMFS, 1999). Table 13 shows that the US contributes about 44% of the Western Atlantic catch of bluefin tuna; but for other tuna species, fishing mortality associated with US pelagic longline fisheries is low relative to that from other fleets targeting the same stocks. Catches of bigeye, yellowfin, albacore and bluefin tuna range between 0.81% and 6% of total Atlantic catches and are unlikely to hinder rebuilding or recovery of overfished stocks. Note also that these values are for the entire "Atlantic" US catch, which includes catches from the GOM, which is not included within the unit of certification. A large proportion of the catch of bluefin comes from the GOM. Additionally, the capacity for US management measures to influence rebuilding of overfished stocks on a stock-wide basis is considered to be minimal. Nevertheless, measures have been implemented by NMFS in order to adhere to and in some cases to exceed requirements under ICCAT recommendations.

Table 13 US (all fleets) versus International catch (t wet weight) during 2010 (NMFS, 2011)

Species	Total International Reported Catch	Region	Total Regional Catch	U.S. Catch	U.S. Percentage of Regional Catch	U.S. Percentage of Total Atlantic Catch
Atlantic bluefin tuna	13,124	West Atlantic	1,830	803	43.8%	6.20%
		East Atlantic/ Med.	11,294	0	0%	
Atlantic bigeye tuna	75,833	Total Atlantic	75,833	673	0.88%	0.88%
Atlantic yellowfin tuna	108,343	West Atlantic	22,210	2,648	11.9%	2.40%
		East Atlantic/Med.	86,133	0	0%	
Atlantic albacore tuna	40,673	North Atlantic	19,649	329	1.6%	0.81%
		South Atlantic/Med.	21,023	0	0%	

Under the HMS FMP (NMFS, 1999, 2006) all vessels fishing commercially for Atlantic tunas (skipjack, bigeye, yellowfin, albacore, and bluefin tuna) require either an Atlantic tunas permit or an Atlantic HMS vessel permit in one of five commercial categories: general, harpoon, purse seine, longline and trap<sup>11</sup>. A vessel can have only one permit at any one time and may not change permit category after 10 days from the date of issuance. All fish dealers are also required to obtain an Atlantic tuna dealer permit in order to purchase regulated Atlantic tunas from permit holding vessels. An international trade permit is also required for international trade of fresh or frozen Atlantic bluefin or bigeye tuna.

In 1999, NMFS implemented a limited access permit program for pelagic longline vessels, initially directed at swordfish and shark fisheries, but which has subsequently resulted in a decrease in the number of vessels permitted to fish for Atlantic tunas by 70% since 1990 (NOAA, 2011). This program established six different permit types for limited access provisions: Swordfish Directed, Swordfish Incidental, Swordfish Handgear, Shark Directed, Shark Incidental and Atlantic Tuna longline (NMFS, 1999; 2010). The access limits included requirements for vessels to hold both a shark and a swordfish limited access permit to gain access to the commercial bigeye, albacore, yellowfin and skipjack tuna pelagic longline fishery. As a result of permit limits (amongst other factors) the number of vessels catching swordfish in the US EEZ has declined by about 50% since 1999, from 226 in 1999 to 114 vessels in 2009 (NOAA, 2010).

In 2000 and 2001, three large areas within the US EEZ were closed to pelagic longlining (see Figure 9) primarily to reduce bycatch of juvenile swordfish, bluefin tuna, billfish and sea turtles from these fisheries. Additional gear restrictions have also been enforced to mitigate bycatch since 2004, including a requirement for use of circle hooks by the entire US pelagic longline fishery (NMFS, 2011). These measures are believed to have had a combined demonstrable effect on total US pelagic longline catches (including discards) of BAYS (bigeye, albacore, yellowfin, and skipjack) (NMFS, 2011). At the 2011 SCRS ICCAT meeting, the Commission adopted Recommendation 11-01, which establishes a comprehensive, multi-year (2012 – 2015) conservation and management plan for both bigeye and yellowfin tuna. This recommendation maintains the TAC at 85,000 mt ww for bigeye tuna and establishes the first TAC for yellowfin tuna at 110,000, in conformance with recommendations from SCRS. The recommendation also includes provisions that would expand reporting of catch, observer coverage, and the need for Parties to submit a list of vessels greater than 20 m length overall (LOA) authorized to fish for yellowfin or bigeye tuna (NMFS, 2011). No ICCAT catch limits apply to the US for bigeye tuna, as the 1999 catch was less than 2,100t.

### **Bigeye tuna (*Thunnus obesus*)**

Bigeye tuna are distributed throughout the Atlantic Ocean between 50°N and 45°S, but do not occur in the Mediterranean (ICCAT, 2010). Stocks are currently considered to be a single Atlantic-wide stock by the SCRS. Bigeye tuna swim at greater depths than other tropical species, and tagging studies have indicated clear diurnal patterns in extensive vertical movements that this species make, spending daytime at much greater depths than at night. Stomach contents of bigeye have included fish, molluscs and crustaceans. This tuna species exhibit relatively fast growth reaching 105cm fork length by age three and 163 cm by age seven, and mature at 3.5 years. Juveniles form schools often associated with drifting objects or sea mounts and are mostly mixed with other tunas such as yellowfin and skipjack tuna. The stock is exploited by three major gears (longline, baitboat and purse seine fisheries) which has implications for assessment of the species as the size of fish caught varies among them; longlines tend to target medium to large fish; directed baitboats tend to target small to large fish, while purse seines and other baitboats catch small fish.

<sup>11</sup> [http://www.nmfs.noaa.gov/sfa/hms/brochures/2010/2010\\_Tuna\\_Regs\\_Brochure\\_06\\_02\\_10.pdf](http://www.nmfs.noaa.gov/sfa/hms/brochures/2010/2010_Tuna_Regs_Brochure_06_02_10.pdf)



Mean average weight of bigeye tuna decreased prior to 1998 but has been relative stable, at around 10 kg during the last decade (ICCAT, 2011a). This weight, however, is quite different according to the fishing gear, around 62 kg for longliners, 7 kg for bait boats, and 4kg for purse seiners. In the last ten years all longline fleets have shown increases in mean weight of bigeye tuna caught, with the average longline-caught fish increasing from 40 kg to 60 kg between 1999 and 2010.

The most recent stock assessment was carried out in 2010 by ICCAT (ICCAT, 2011a). In general, data availability is good for this species and continues to improve with addition of new relative abundance indices for an increasing number of fleets. Some data gaps exist on size of fish caught from some fleets and IUU catches, forcing the Scientific Committee to assume catch-at-size for an important part of the overall catch.

Both age-structured and production models are applied, but non-equilibrium production models were used to characterize the status of the stock, using a series of combined indices (synthesizing information existing in the individual indices from the different fleets). However, results were sensitive to the abundance index trend assumed; so characterisations were developed from the joint distribution of model run results using each of the three alternative combined indices.

The plausible range of MSY estimated from the joint distribution was between 78,000 and 101,600 t (80% confidence limits), with a median MSY of 92,000t. These estimates reflect the current relative combination of fisheries catching small or large bigeye tuna; MSY can change considerably with changes in relative fishing effort applied by the different gear types. Although historical estimates indicate large declines in biomass and increases in fishing mortality beyond  $F_{MSY}$  in the 1990s, the last 5-6 years indicate possible increases in biomass and declines in fishing mortality (ICCAT, 2011a).

NMFS set limit reference points (MSST and MFMT) for this species as  $0.6B_{MSY}$  and  $F_{MSY}$  at 0.17 (NMFS, 2011). The latest ICCAT assessment estimated  $B_{10}/B_{MSY}$  as 1.01 (0.72-1.34) and  $F_{09}/F_{MSY}$  as 0.95 (0.65-1.55); therefore, NMFS considers this stock not to be overfished (but rebuilding) and not suffering from overfishing (NMFS, 2011).

#### **Bigeye specific US management measures**

Although no catch limits apply to the U.S. for bigeye tuna catches, to provide additional protection to the bigeye tuna stock, particularly the juvenile component, U.S. NMFS has implemented a minimum size of 27 inches fork length (approximately 6.8kg; therefore exceeding the previous ICCAT requirement of 3.2kg ) for all US fisheries landing bigeye tuna (NOAA, 2011). The closure of three large areas to pelagic longline fishing in the U.S. Atlantic EEZ in 2000 and 2001 (including the Gulf of Mexico), has had demonstrable effects on bigeye tuna effort and catches (NOAA, 2011).

Comparisons between catch and discard numbers of bigeye tuna in 2005-10 with those in 1997-1999 (prior to closures) illustrate declines by 50% and 69% respectively (NMFS, 2011). Vessels fishing in the areas within the unit of certification landed 333 t of bigeye.

#### **Yellowfin tuna (*Thunnus albacares*)**

Yellowfin tuna is distributed across tropical and subtropical waters of all three oceans. Similarly to bigeye, juveniles of this species form mixed schools with skipjack and juvenile bigeye and are mainly limited to surface waters, commonly associating with floating objects. Larger fish form schools in surface and subsurface waters. Schooling yellowfin are also often associated with dolphins and whale sharks. Their prey include other fish, pelagic crustaceans, and squid and like all tunas their body shape is evolved for speed, enabling them to pursue and capture fast-moving baitfish such as flying fish, saury and mackerel. As with bigeye, their vertical distribution in the water column tends to be deeper during the day, moving up into shallower surface waters at nights.

Although separate spawning areas are evident within the Atlantic, a single stock for the entire Atlantic is assumed as a working hypothesis for ICCAT assessments (ICCAT, 2011a). Growth rates have been described for yellowfin as being relatively slow initially, increasing when fish leave nursery grounds. Recent research (Shuford et al., 2007) has questioned this two phase pattern in growth which has implications for the assessment currently based on it; the working group recommend this be followed up in the intercessional period (ICCAT, 2011b).

A full stock assessment was conducted for yellowfin tuna in 2011, following similar methods to previous assessments by applying both an age-structured model (VPA) and a non-equilibrium production model (ASPIC) to the available catch data through 2010 (ICCAT, 2011a). Models were similar in structure to those used in the last (2008) assessment, but additional alternative model structures of the production model and the VPA were explored in sensitivity runs. The sensitivity runs confirmed that some of the estimated benchmarks obtained from production models are somewhat sensitive to the assumption that MSY is obtained at half of the virgin biomass – ICCAT benchmarks are this currently based on this assumption. Additionally, results from the various stock assessment models indicate that stock status differs from that estimated during the 2008 assessment (ICCAT, 2011b).

Results from the age-structured (VPA) models point to a more pessimistic stock status (in terms of spawning stock biomass) than did the production model (ASPIC) results (fishable biomass), with VPA results generally indicating a lower relative biomass (a more overfished status) and a higher relative fishing mortality rate (higher level of overfishing). Each of these models has relative strengths and weaknesses; the production model utilizes all the years of available data but assumes that the selectivity across lengths (ages) does not change over time; whereas the age structured model can track changes in selectivity but relies on accurate assignment of ages and is restricted to years for which adequate catch at size data are available (ICCAT, 2010). The final estimate of current stock status relative benchmarks ( $F/F_{MSY}$  and  $B/B_{MSY}$ ) and uncertainty around the estimates was derived from the combined joint distribution (ICCAT, 2011b).

The estimate of MSY (~144,600 t) is below previous estimates possibly because overall selectivity has shifted to smaller fish; the impact of this change in selectivity on estimates of MSY is illustrated in by age structured model results. Bootstrapped estimates of the current status of yellowfin tuna based on each model. When the uncertainty around the bootstrapped point estimates from both models (which reflects the uncertainty in the inputs) is taken into account, there was only an estimated 26% chance that the stock was not overfished and overfishing was not occurring in 2010 according to ICCAT benchmarks (ICCAT, 2011a). The SCRS determined that the stock is overfished but overfishing is not occurring (NMFS, 2011).

NMFS set limit reference points (MSST and MFMT) for this species as  $0.5B_{MSY}$  (age 2+) and  $F_{year}/F_{MSY} = 1.0$  respectively. The latest ICCAT assessment (in 2011) estimated  $B_{10}/B_{MSY}$  as 0.85 (0.61-1.12) and  $F_{current}/F_{MSY}$  as 0.87 (0.68-1.40); Following NMFS application of thresholds, the stock is not considered to be suffering from overfishing and although current biomass is below  $B_{MSY}$ , it is above MSST and is therefore not considered to be overfished (NMFS, 2011).

#### **Yellowfin tuna specific US management measures**

The U.S. has also implemented a number of regulatory measures that ensure consistency with ICCAT Recommendation 93-04 on Supplemental Regulatory Measures for the Management of Atlantic Yellowfin Tuna, which prohibits increases in effective fishing effort for Atlantic yellowfin tuna over 1992 observed levels. The closures in the U.S. Atlantic EEZ in 2000 and 2001 to pelagic longline fishing, had demonstrable effects on yellowfin tuna effort and catches (NOAA, 2011), with catch and

discard numbers of yellowfin tuna decreasing between the period 1997-1999 and 2005-10 by 39% and 44% respectively (NMFS, 2011). In 2004, the U.S. also implemented circle hook requirements in the pelagic longline fishery, which contribute to reducing post-release mortality of incidentally caught yellowfin tunas. The U.S. has also maintained a minimum size for retaining yellowfin tuna (in both recreational and commercial fisheries) despite the repeal of a minimum size of 3.2kg in 2005 by ICCAT (ICCAT Recommendation 72-01; 05-01) (NOAA, 2011).

### **Albacore tuna (*Thunnus alalunga*)**

Albacore is a temperate tuna species distributed throughout the Atlantic as well as the Mediterranean Sea. It is generally found in surface waters with temperatures between 15.6° and 19.4° C, although larger individuals have a wider depth and temperature range (13.5° to 25.2° C) (NMFS, 2006). The existence of three stocks is assumed, northern and southern Atlantic stocks and a Mediterranean stock (ICCAT, 2011a). Aggregations are composed of similarly sized individuals, with schools of the largest individuals tending to make the longest journeys (NMFS, 2006). Albacore often school with other tuna species such as skipjack, yellowfin and bluefin tuna (NMFS, 2006). As with other tuna, albacore probably exhibit opportunistic feeding behavior, with little reliance on specific prey items. Current knowledge on habitat distribution according to size, spawning areas and maturity estimates of Atlantic albacore is based on limited historical studies; but some more recent studies have indicated this species may be sensitive to environmental variability (ICCAT, 2011a). The expected life span for albacore is around 15 years and maximum reported size is 127cm fork length (NMFS, 2006). Both sexes sexual mature at five years at 90 to 94 cm FL (ICCAT, 1997), but mortality is thought to be higher for females (NMFS, 2006). Albacore is considered to be of medium productivity/resilience with respect to risk of extinction (Musick et al., 2000)

The northern stock is exploited by both surface (e.g., purse seine, baitboats) and longline fisheries, the former targeting immature and sub-adult (50-90cm) fish and the latter targeting immature and adult (60-130cm) fish (ICCAT, 2011a). Total reported landings began to decline after 1986, primarily due to reduction in effort from troll, baitboat and longline fisheries. Catches stabilised in the 1990s and reached a maximum of 36,989t in 2006, but since then catches have declined in the North Atlantic. The total catch in 2010 was 19,649 t, representing an increase of 25% compared to the 2009 yield, which was the lowest recorded in the time series since 1950 (ICCAT, 2011a).

The latest stock assessment was carried out in July 2009 using data available up to 2007. Recruitment is estimated to have been declining from higher levels in the 1960s to the lowest level estimated in 2007. The 2009 assessment indicated the stock remained below  $B_{MSY}$  ( $B_{2007}/B_{MSY} = 0.62$  (0.45-0.79)) since 1960 and  $SSB_{2007}$  was estimated to be at approximately 62% of  $SSB$  at  $MSY$ . Corresponding fishing mortality rates have been above  $F_{MSY}$ , but the current ratio  $F_{2007}/F_{MSY}$  is only slightly higher than  $F_{MSY}$  ( $F_{2007}/F_{MSY} = 1.045$  (0.85-1.23)). Trajectories of fishing mortality and spawning stock biomass relative to  $MSY$  reference points indicate that the northern albacore stock has been overfished (ICCAT SCRS definition) since the mid-1980s. As a result, a rebuilding plan for northern Albacore tuna was established by ICCAT in 2009 (ICCAT, 2009). Minimum stock size threshold as defined for this species by NMFS is  $0.7B_{MSY}$ , and maximum fishing mortality threshold is  $F_{year}/F_{MSY}=1$ ; the stock is therefore defined as overfished and suffering from overfishing by NMFS (NMFS, 2011).

### **Albacore tuna specific management measures**

Recognising that the stock of northern albacore was considered by SCRS to be close to full exploitation in 1998, a Recommendation was adopted to limit fishing capacity on this stock [Rec. 98-08]. Pursuant to this recommendation the U.S. implemented limited entry in its pelagic longline fishery in 1999, which has demonstrably reduced effort of vessels fishing for this species, and

submits the required reports providing a list of U.S. vessels operating in the fishery on an annual basis. Due to the continued overfished status of the northern albacore stock, the Commission implemented Recommendation 07-02 in 2007 which reduced the ICCAT TAC to 30,200 t in 2008 and 2009. A rebuilding plan was established by ICCAT for the stock (ICCAT Rec 09-05) and set the TAC to 28,000t for 2010 and 2011. The current assessment indicates TAC in the future should be less than 28,000 t to promote stock rebuilding and that lower catch levels would promote more rapid rebuilding (ICCAT, 2011). However, the TAC has remained at 28,000t since 2009. Under this TAC, the US quota is 527t for 2010 and 2011 (NOAA, 2011). US catches have remained well within ICCAT quota limits (in 2010 US catches represented ~60% of the US quota), both prior to and subsequent to the rebuilding programme, but there are no other restrictions on the number or size of albacore that can be landed by US vessels.

### **Atlantic bluefin tuna (*Thunnus thynnus*)**

Atlantic bluefin Tuna is one of the largest bony fishes, capable of reaching over 450kg in weight and is the only large pelagic fish living permanently in temperate Atlantic waters (ICCAT, 2011). It has a wide geographical distribution, inhabiting the entire North Atlantic and the Mediterranean Sea. Archival tagging and tracking information have indicated that this species can sustain cold as well as warm temperatures while maintaining a stable internal body temperature. Other tagging studies indicate that not only do bluefin tuna occupy surface and subsurface waters, but also frequently dive to depths of between 500 and 1000m (ICCAT, 2010). Bluefin are a highly migratory species that also seems to display a homing behaviour and spawning site fidelity in the Mediterranean and Gulf of Mexico, which constitute the two main spawning areas known to date. Although the Atlantic bluefin tuna population is managed as two stocks separated by the 45°W meridian, its population structure remains poorly understood (ICCAT, 2010).

Juvenile growth is rapid for a teleost fish at about 30cm per year, but is slower than for other tuna and billfish species (ICCAT, 2010); after one year fish reach about 4kg and 60cm long. Growth in length tends to be slower in adults than in juveniles, but growth in weight increases; at 10 years old a bluefin tuna is about 200cm and 170kg and by 20 years is 270cm in length and 400kg. Currently, bluefin are assumed to mature at approximately age 4 (25kg) in the Mediterranean and at age 9 (145kg) in the Gulf of Mexico. In 2009, considerable new information on growth, maturity and spatial dynamics of Atlantic and Mediterranean bluefin became available (SCRS/2009/192).

The latest stock assessment for Atlantic bluefin was carried out in 2010 (ICCAT, 2011a) and the assessment of the western stock is summarised here. For details of the eastern stock assessment see ICCAT (2011a).

The total catch for the West Atlantic including discards has been relatively stable since 1982 due to the imposition of quotas. However, there have been steady declines in catch since 2002, when 3,319t was taken, the highest level since 1981. 2,014t of this was taken by US vessels fishing in the northwest Atlantic (including the Gulf of Mexico), but between 2003 and 2007 their catches declined precipitously and the US quota was not realised from 2004-2008. A new assessment was conducted in 2010, including data available through 2009 and applying the new growth curve that assigns fish above 120cm to older ages than assigned by the previously used growth curve. As a result, the base model estimates lower fishing mortality rates and higher biomasses for spawners, but lower maximum sustainable yield potential (ICCAT, 2011a). The trends estimated in 2010 are consistent with previous analyses in that SSB declined steadily between 1970 and 1992 and since fluctuated around 21% to 29% of the level in 1970.

In the 2010 assessment, future recruitment was assumed to fluctuate around two alternative scenarios; a 'high recruitment scenario' in which future recruitment has the potential to achieve levels that occurred in the early 1970's due to rebuilding of the stock and a 'low recruitment scenario' in which future recruitment is expected to remain near present low levels. As the Committee has no strong evidence to favour either of these scenarios, results are considered to represent upper and lower bounds to rebuilding potential. The low recruitment scenario suggests that  $SSB_{2009}$  is 10% higher than the  $MSY$  level and  $F_{2006-2008}$  is 70% of  $F_{MSY}$ ; the high recruitment scenario is more pessimistic and estimates stock status to be at 0.15 of  $B_{MSY}$  and  $F$  to be at 1.9 of  $F_{MSY}$ . Probabilities of achieving  $B_{MSY}$  within the Commission rebuilding period were projected for alternative catch levels (BFTW-Table 1, BFTW-Figure 7). The "low recruitment scenario" suggests that biomass is currently sufficient to produce  $MSY$ , whereas the "high recruitment scenario" suggests that  $B_{MSY}$  has a very low probability of being achieved within the rebuilding period. Despite this large uncertainty about the long term future productivity of the stock, under either recruitment scenario current catches (1,800 t) should allow the biomass to continue to increase. Also, catches in excess of 2,500 t will prevent the possibility of the 2003 year class elevating the productivity potential of the stock in the future.

Minimum stock size threshold defined by NMFS for bluefin tuna is  $0.86 SSB_{MSY}$  (equivalent to 10,941t for the low recruitment scenario and 78,872t for the high recruitment scenario) and maximum fishing mortality threshold is defined as  $F_{MSY}=0.16$  (0.14-0.91) for the low recruitment scenario and  $F_{MSY}=0.06$  (0.06-0.07) for the high recruitment scenario. Current relative biomass levels are estimated to be  $SSB_{09}/SSB_{MSY}=1.1$  (0.89-1.35) or  $SSB_{09}/SSB_{MSY}=0.15$  (0.10-0.22) for low and high recruitment scenarios respectively; while current relative fishing mortality rates are estimated to be  $F_{06-08}/F_{MSY}=0.73$  (0.59-0.91) or  $F_{06-08}/F_{MSY}=1.88$  (1.49-2.35) for low and high recruitment scenarios respectively. Under the low recruitment scenario, NMFS defines the stock as not overfished and not suffering from overfishing and under the high recruitment scenario as overfished and suffering from overfishing (NMFS, 2011).

#### **Atlantic bluefin tuna specific management measures**

In 1998, ICCAT initiated a 20-year rebuilding plan for the western Atlantic bluefin tuna (BFT) designed to achieve  $B_{MSY}$  with at least 50% probability. In response to recent assessments, in 2008 the Commission recommended a total allowable catch (TAC) of 1,900 t in 2009, 1,800 t in 2010 [Rec. 08-04], and 1,750 t in 2011 [Rec. 10-03] in line with advice from the SCRS. The respective U.S. quota represents about 50% of the total ICCAT TAC and includes dead discard estimates. The US bluefin fishery continues to be regulated by the quotas, seasons, gear restrictions, limits on catches per trip, size limits, and no-sale provisions for the U.S. angling category, all designed to varying degrees to manage total U.S. landings in conformance with ICCAT recommendations (NOAA, 2011).

Recommendation 10-03 revised the annual WBFT quota for the U.S. to 948.70 annually for 2011 and 2012, including 25 mt to account for bycatch related to directed longline fisheries in the vicinity of the management area boundary. Consistent with Rec. 10-03, the U.S. implemented the recommended 2011 quota as well as a 2011-2012 two-year balancing period for limiting the harvest of BFT measuring less than 115 cm (45 inches) to 10% (by weight) of the U.S. quota via a final rule that was published 5 July 2011 (76 FR 39019). The reduction in the amount of underharvest that may be carried forward to 2011 (i.e., not to exceed 10 percent of a Contracting Party's initial quota allocation) was also implemented. In 2011, a different approach to setting the adjusted quota was taken compared with the previous four years; half of the estimated dead discards was accounted for up front using the 2010 estimate (122 mt) as a proxy, and the underharvest from the 2010 fishing year (1 January 2010 through 31 December 2010) was applied to the 2011 fishing year (1 January 2011 through 31 December 2011), resulting in an adjusted 2011 quota of 982.4 mt. Total 2011 landings and dead discards will be accounted for and reported to ICCAT in 2012 and consistent with

Rec. 10-03, the United States began submitting provisional reports of monthly catches of BFT to the Secretariat in June 2011 (NOAA, 2011). Catches from the fishery considered here represent ~6% of the total US quota and ~3% of the TAC for the western Atlantic.

U.S. PLL vessels fishing for swordfish are prohibited from landing young school, school, large school and small medium sized fish, and are limited to landing large medium or giant sized fish dependent on the catch quantities taken of other species. For example, 1/vessel/trip or 2/vessel/trip or 3/vessel/trip can be retained with 2000lbs, 6000lbs or 30,000lbs of other species respectively.

The closure of three large areas to pelagic longline fishing in the U.S. Atlantic EEZ in 2000 and 2001 (including the Gulf of Mexico), led to an increase in bluefin tuna catch and discard numbers by 64% and by 36% respectively between 1997-1999 and 2005-2010, presumably as a result of the redistribution of effort caused by the closures (NMFS, 2011)

In May, 2010, NMFS received a petition to list BFT as threatened or endangered under the Endangered Species Act (ESA) and designate critical habitat concurrently with its listing. The following September, NMFS announced a 90-day finding (75 FR 57431) that the petition presented substantial scientific information indicating the petitioned action may be warranted; NMFS conducted a species status review of BFT, but in May, 2011, NOAA announced that listing BFT as endangered or threatened is not warranted at this time (NMFS, 2011a). NOAA has committed to revisit this decision by early 2013, when more information will be available about the effects of the Deepwater Horizon BP oil spill, and from the 2012 BFT stock assessment and associated ICCAT recommendations (NMFS, 2011a). NOAA has also announced that it is formally designating both the western Atlantic and eastern Atlantic and Mediterranean stocks of BFT as “species of concern” under the ESA which places bluefin tuna on a watchlist for concerns regarding its status and threats (NMFS, 2011a).

### **Dolphinfish (*Coryphaena hippurus*)**

Dolphinfish is an oceanic pelagic fish found worldwide in tropical and subtropical waters usually restricted to waters warmer than 20°C (SAFMC, 2003). The western Atlantic range of dolphinfish is from George’s Bank, Nova Scotia to Rio de Janeiro, Brazil but is also found throughout the Caribbean Sea and the Gulf of Mexico. There is pronounced seasonal variation in abundance, being caught off the Florida east coast mainly between April and June. Dolphinfish are batch spawners with a protracted spawning season. Size at first maturity ranges from 35cm fork length in Florida to 53 cm fork length in the Gulf of Mexico for sexes combined, males reach first maturity at a greater size than females. Dolphinfish grow rapidly with first year daily growth rates ranging from 1.6-4.2 mm fork length, and reach a large maximum size of 140-150cm with maximum ages of 3-4 years (SAFMC, 2010). Relative to other marine fish, this species has a high-moderate productivity/resilience and low extinction risk (Musick et al., 2000).

Dolphinfish is managed by the South Atlantic Fisheries Management Council (SAFMC) under the 2003 Fishery Management Plan for Dolphin and Wahoo of the Atlantic (SAFMC, 2003). Time series data do not indicate a decline in stock abundance nor a decrease in the mean size of individual fish (SAFMC, 1998). An ‘exploratory’ stock assessment was conducted for dolphinfish in 2000 (Prager, 2000); the first full assessment is scheduled for 2015. Life history estimates from the 2000 assessment suggest dolphinfish may be able to withstand a relatively high rate of exploitation; the abundance index developed for the assessment indicated increasing trends in stock size and the surplus production model based on this index estimated stock status to be above  $B_{MSY}$ . However, the current stock structure is based on limited evidence and estimates of vital rates are dated.

As a result of this uncertainty associated with the stock status and the potential for localised depletion, the 2003 FMP implemented a number of measures, including the following relevant to the fishery under certification:

- A cap of 1.5 million pounds or 13% of total landings, whichever is greater, for the commercial fishery for dolphin. Should the catch exceed this level, the Council will review the data and evaluate the need for additional regulations which may be established through the framework;
- A 1,000 pound trip limit for dolphin south of 31° N. Latitude (between Jekyll Island and Little Cumberland Island, Georgia) in the EEZ southward through the SAFMC's area of jurisdiction for dolphin (landed head and tail intact) with no transfer at sea allowed;
- A minimum size limit for dolphin of 20 inches fork length off Florida and Georgia;
- Using the best available estimates of natural mortality ( $M = 0.68-0.80$ );  $MSST ((1-M)*BMSY)$  set at 50% BMSY.
- A MFMT set at  $F_{current}/F_{MSY}$

Under the 2003 dolphin and wahoo FMP, MSY for dolphin in the Atlantic, U.S. Caribbean, and Gulf of Mexico is between 18.8 and 46.5 million pounds.

A 'Comprehensive Annual Catch Limit Amendment' is currently under development (SAFMC, 2011) which will meet the mandates of the Magnuson-Stevens Act to establish Annual Catch Limits (ACLs) and Accountability Measures (AMs) for species managed by the Council that are not undergoing overfishing by the end of 2011 (SAFMC, 2011). As well as dolphinfish, the amendment addresses a number of species in the snapper grouper management complex, wahoo, and golden crab.

The area closures brought in to reduce bycatch of other pelagic species has led to increases in the numbers of albacore caught by 75% between the period 1997-1999 and 2005-10 (NMFS, 2011). Dolphinfish is one of the four main bycatch species comprising ~90% of the total catch by weight and only 1-2% of numbers caught are discarded (FLS and POP data).

### **Shortfin mako (*Isurus oxyrinchus*)**

Shortfin mako sharks are large pelagic sharks with a wide geographical range, occurring in the Atlantic, Pacific and Southern Oceans, although most often between 50°N and 50°S (ICCAT, 2010). Very little is known about the biology of this species, but some updated biological information became available from more recent research in the early and mid-2000s (Simpfendorfer et al, 2008). Female shortfin mako sharks have a low growth rate, mature at 18.5 years, a maximum lifespan of 32 years with a reproductive period of 3 years producing small litters of 12.5 pups and an intrinsic rate of increase of 0.014 (Simpfendorfer et al., 2008). These factors combined indicate a low productivity/resilience and high extinction risk for this species (Musick et al, 2000). An ecological risk assessment carried out for a number of pelagic shark species caught in ICCAT fisheries in 2008 (Cortes et al., 2008), which estimated productivity and susceptibility of species, indicated that shortfin mako was within the highest risk productivity-susceptibility area.

Under ICCAT shortfin mako are managed as two separate north and south Atlantic stocks (ICCAT, 2010). The most recent assessment for the north Atlantic stock was in 2009; a number of models were applied and results varied depending on assumptions made by each including historical catch and effort estimates used, catch rate and abundance relationships, the initial status of the stock in 1950 and various biological parameters (ICCAT, 2009). Most models indicated a stock depletion since the 1950s to 50% of unfished biomass; but model outcomes varied. Some indicated a current biomass near or below  $B_{MSY}$  with current fishing mortality greater than  $F_{MSY}$ , while others estimated lower levels of depletion and no overfishing. ICCAT concluded that there is a non-negligible probability that the stock could be below  $B_{MSY}$  ( $B_{2007}/B_{MSY} = 0.95-1.65$ ) and that fishing mortality could be above  $F_{MSY}$  ( $F_{2007}/F_{MSY} = 0.48-3.77$ ) (ICCAT, 2010).

The HMS FMP implemented in 1993 (NMFS, 1993) identified three management groups: large coastal sharks, small coastal sharks and pelagic sharks; shortfin mako are included within the pelagic shark complex. In 1997, as a result of indications that Atlantic shark abundance had declined, commercial quotas for the three shark complexes were reduced and the 1999 HMS FMP implemented a number of measures to address the overfished status, which included changes to the quotas for pelagic and small coastal sharks and establishment of separate quotas for porbeagle and blue sharks.

The current quota for pelagic sharks other than porbeagle and blue sharks is 488t (NOAA, 2010) and in 2009, total US pelagic longline landings of shortfin mako were 194t (NOAA, 2010).

NMFS determined the North Atlantic shortfin mako shark as approaching an overfished status and that overfishing is occurring on the stock (NMFS, 2010a). The stock was first designated as suffering from overfishing in 2008, but ICCAT did not recommend a TAC or mortality reduction to prevent overfishing of shortfin mako sharks. Various options were considered independently by NMFS and these are detailed in the 2010 Amendment 3 to the Consolidated HMS FMP (NMFS, 2010b). No implementation of a rebuilding plan under the HMS FMP has been triggered at this time (NMFS, 2010b). Final actions implemented by the 2010 Amendment 3 to the Consolidated HMS FMP in response to the status of this species are to take action at the international level through international fishery management organizations to establish management measures to end overfishing of shortfin mako sharks, and to promote the live release of shortfin mako sharks in the domestic commercial and recreational shark fisheries (NMFS, 2010b). As detailed above, permit limits apply to sharks as well as tuna and swordfish, and there are additional trip limits applied as follows: Federal permit required for commercial harvest, finning & filleting is prohibited and possession limits of 1 shark/person/day or 2 sharks/vessel on any vessel with 2 or more persons on board.

In 2010, shortfin mako made up the largest amount of shark species landings (in weight) by US PLL vessels at a total of ca. 217 mt whole weight (ww); catches from the fishery under assessment represented about 50% of this catch. However, in comparison to the cumulative fishing mortality of North Atlantic shortfin mako sharks caused by other nations, as with other HMS stocks, the US contributes very little to mortality on this species in the North Atlantic because there is no directed U.S. commercial fishery; in 2010, US catches represented approximately 5.4% and 3.3% of total landings of this species in the North Atlantic and in the whole Atlantic respectively (NMFS, 2011).

645 mt and 23,376 shortfin mako were landed by vessels fishing across all areas between 2005-2011 (FLS database). Landed catches of shortfin mako have been distributed relatively evenly across areas during this time period, but the greatest proportion of catch by numbers was reported in the MAB. Across all areas, the greatest proportion of shortfin mako observed discarded were released alive (Table 8).



### 3.4.2.4 Main bycatch species

Main bycatch species were selected using the following criteria:

1. Determine any species representing >50% of catch by numbers discarded in FLS and POP data; from these
  - a. select species that also represent >5% of total catch by numbers in either POP or FLS data
2. In addition, species were also selected if they met all of the following criteria:
  - a. that are US overfished **or** IUCN vulnerable status or above
  - b. Proportion of total catch in numbers is >1% or >50% fish discarded dead
  - c. US no take species

This process was carried out separately for data from each of the statistical areas covered by the unit of certification and with all data combined to explore different exploitation patterns across the whole area and between different areas within the unit of certification. Table 14 summarises species determined to be main bycatch species in the pelagic longline fishery for assessment with the FAM and respective selection criteria, highlighting where possible variations in main species amongst statistical areas.

#### **Blue marlin (*Makaira nigricans*)**

Blue marlin are large apex predators averaging 100-175kg (220-385lb) in weight, up to 2m in length and range across the Atlantic from Canada to Argentina in the west and from the Azores to South Africa in the east. Young blue marlin are one of the fastest growing teleosts, reaching 30-45 kg (66-99 lb) in the first year. Life expectancy for blue marlin is between 20-30 years based on age and growth analyses of dorsal spines. Predicting age from length of weight is problematic due to many age classes in the fishery. Blue marlin reach maturity at about 80 cm in males and 50 cm in females<sup>12</sup>. Peak spawning activity in the North Atlantic Ocean occurs between July and October, with females capable of spawning up to four times per reproductive season (NMFS, 2006). The central and northern Caribbean Sea and northern Bahamas have historically been known as the primary spawning area for blue marlin in the western north Atlantic (ICCAT, 2010).

Blue marlin are generalist predators feeding primarily on fish and squid in surface coastal and oceanic waters. They also feed on mesopelagic fish and crustaceans (from depths between 200 and 1000m depth) associated with rocky, sandy, and reef bottoms (NMFS, 2006). It is believed that they spend most of their time during daylight hours between 40-100 m and at or very close to the surface at night (SEDAR, 2006) but these patterns can vary amongst individuals and surface temperature and oxygen conditions. Migratory patterns of blue marlin include trans-Atlantic as well as trans-equatorial movements, and the species is generally considered to be a solitary species. Tagging studies by the Cooperative Tagging Center (CTC) have illustrated that these fish move 903 km on average. Strong seasonal patterns of movement of individuals between the United States and Venezuela have also been recorded. These movements are also believed to be related to changes in sea surface temperatures as adults are found primarily in the tropics within the 24°C (75°F) isotherm.

<sup>12</sup> Fishbase <http://www.fishbase.org/>

Table 14 Main bycatch species for the pelagic longline fishery and criteria used for their selection.

Main bycatch species	>50 % catch numbers discarded & represent >5% total catch by numbers (FLS)	>50 % catch numbers discarded & represent >5% total catch by numbers (POP)	>50 % numbers caught discarded (POP) & Proportion of total catch in numbers is >1% or >50% fish discarded dead	NMFS overfished, overfishing status	IUCN status (Source: <a href="http://www.iucnredlist.org/">http://www.iucnredlist.org/</a> )	US no take species	Total numbers observed	total numbers caught	% of total catch by numbers	% of catch discarded	% total discards, Discarded dead
blue shark <i>Prionace glauca</i>	MAB, NCA/SAR, NEC, NED	-	-	-			25936	208391	21.54	97.98	18.08
pelagic ray <i>Pteroplatytrygon violacea</i>	-	MAB	-	-			4970	not reported	4.13	99.28	25.66
blue marlin	-	-	FEC	overfished, overfishing	v	y	580	1728	0.48	97.93	28.87
white marlin (roundscale spearfish)	-	-	FEC	overfished, overfishing	v	y	705 (525)	2922 (693)	0.48	97.93	28.87
Atlantic sailfish	-	-	FEC, MAB	overfishing	na	y	370	871	0.31	97.84	33.43
night shark	-	-	MAB, NCA/ SAR/ NEC/ NED, SAB	-	v	y	1109	3604	0.92	99.73	70.16
scalloped hammerhead shark	-	-	MAB, NCA/ SAR/ NEC/ NED, SAB	overfished, overfishing	e	y	864	6979*	0.72	93.06	46.39
bigeye thresher shark	-	-	FEC, NCA/ SAR/ NEC/ NED, SAB	-	v	y	283	1929	0.23	98.94	56.07
longfin mako shark	-	-	FEC, MAB	-	v	y	111	1378	0.09	96.40	52.34



The most recent assessment for blue marlin was conducted in 2011 through a process that included a data preparatory meeting in May 2010 and an assessment meeting in April (SCRS/2011/013). During the 2010 ICCAT Blue Marlin Data Preparatory meeting, catch rate data were updated with five new standardised catch rate indices and a historical catch rate index from the Venezuelan sport fishery. The last year of fishery data used in the assessment was 2009.

The results of the 2011 ICCAT assessment indicated that the stock remains overfished and undergoing overfishing, which is in contrast to the results of the 2006 assessment which indicated that even though the stock was likely overfished, the declining trend had partially stabilized (ICCAT, 2011). Although uncertain, the results of the 2011 stock assessment indicated that if the recent catch levels of blue marlin (3,240t in 2009) are not substantially reduced, the stock will continue to decline further (ICCAT, 2011). The current management plan does not have the potential of recovering the blue marlin stock to the BMSY level.

Based on the ICCAT assessment results, NMFS determines this species to be overfished and subject to overfishing (see Table 15).

Table 15 Stock Assessment summary table – taken from 2011 SAFE Report for Atlantic HMS

Species	Current Relative Biomass Level	Minimum Stock Size Threshold (MSST)	Current Relative Fishing Mortality Rate	Maximum Fishing Mortality Threshold	Outlook – from Status of Stocks for US managed species
Blue marlin	$B_{09}/B_{MSY} = 0.67$ (0.53-0.81)	$0.9B_{MSY}$ (22,870t; based on $SSB_{MSY}$ )	$F_{09} > F_{MSY} = 1.63$ (1.11-2.16)	$F_{MSY} = 0.07$	Overfished: overfishing is occurring
White Marlin	$B_{04} < B_{MSY}$ : yes	$0.85 B_{MSY}$ (13,104-23,619t)	$F_{04} > F_{MSY}$ : Possibly	0.07-0.11	Overfished: overfishing is occurring
West Atlantic Sailfish	$B_{07} < B_{MSY}$ : Possibly	$0.78B_{MSY}$ <i>unknown</i>	$F_{07} > F_{MSY}$ : Possibly	<i>unknown</i>	Overfished; overfishing is occurring

### White marlin (*Kajikia albida*)

White marlin (*Kajikia albida* previously *Tetrapturus albidus*) is found exclusively in the Atlantic (unlike blue marlin and sailfish which are also found in the Pacific). They may occur in small, same-age schools, but like blue marlin they are generally a solitary species. White marlin usually can be found where large numbers of prey items are available and thus are often associated with rip currents and fronts, and with bottom features such as steep dropoffs, submarine canyons, and shoals. This species is primarily a generalist piscivore, but also feeds on squid. As with blue marlin, these fish make substantial movements; recaptures from tagging studies have indicated a substantial number of individuals move between the Mid-Atlantic coast of the United States and the northeast coast of South America. Trans-Atlantic movements appear to be less common for this species. White marlins are primarily resident in surface waters, but also make daily vertical movements to depths of up to more than 300m.

These fish also grow quickly, with females attaining a larger maximum size than males but these dimorphic growth differences are not as extreme as noted for blue marlin. They have a life span of 18 years (NMFS, 2006), and grow to over 280 cm (110 inches) TL and 82 kg (184 lb). White marlin spawn in the spring (March through June) in the north western Atlantic Ocean in tropical and sub-tropical waters with relatively high surface temperatures and salinities (20 – 29°C (68 – 84°F) and over 35 ppt), moving to higher latitudes during the summer. At least three spawning areas are believed to exist in the western north Atlantic: northeast of Little Bahama Bank off the Abaco Islands; northwest of Grand Bahama Island; and southwest of Bermuda. Females are generally 20 kg (44 lb) in mass and 130 cm (51.2 inches) in length at sexual maturity.

In 2006 a “new” billfish species, roundscale spearfish (*Tetrapturus georgii*) was identified, which had previously been misidentified as white marlin due to similarities in size, shape and color. DNA testing and other identifying factors have confirmed the taxonomic distinction between roundscale

spearfish and white marlin and the genus of Atlantic white marlin has since been changed (in 2008) from *Tetrapturus* to *Kajikia*. Recent analysis (Beerkircher et al., 2010) indicates that round scale spearfish constitute 27% of 'white marlin' catches from the north west Atlantic. All biological material sampled from white marlin prior to the confirmation of round scale spearfish (*T. georgii*) presence in catches, therefore contains unknown mixtures of these two species and reproductive parameters, growth curves and other biological studies previously thought to describe white marlin, are now thought not to be representative of this species (Beerkircher et al., 2010).

It has now been confirmed that white marlin landings reported to ICCAT include roundscale spearfish in significant numbers, so that historical statistics of white marlin include a mixture of both species. Studies of white marlin/roundscale spearfish ratios have been conducted, with overall estimated ratios between 23-27%. Previously, these were thought to represent only white marlin. In some areas, however, only one species is present in these samples (ICCAT, 2011).

White marlin has been managed as single Atlantic-wide stock. The last assessments for this species by ICCAT was carried out in 2006. The 2006 assessments of white marlin found that they are overfished and that their biomass level are most likely to be well below the  $B_{MSY}$  estimated for these species in 2000 (ICCAT, 2011). Considerable uncertainty in the assessments of both blue and white marlin exists due to considerable amounts of data reported to ICCAT as unclassified billfish species. Data is also missing or incomplete for fleets of increasing importance such as artisanal fleets in general and artisanal fleets fishing off anchored fish aggregating devices (MFADs) in the Antilles (ICCAT, 2010). The situation is further complicated by the recently identified round scale spearfish constituting significant proportions of catches previously considered to be white marlin. NMFS status determination criteria for white marlin are detailed in Table 15.

### **Atlantic Sailfish (*Istiophorus platypterus*)**

Atlantic sailfish is a pan tropical species occurring in the Atlantic, Pacific and Indian oceans; but two management units, eastern and western, are determined for assessment of Atlantic populations by ICCAT (ICCAT, 2010). Sailfish are the most coastal of all billfish species and conventional tagging studies suggest they move shorter distances compared with other billfish (ICCAT, 2010). A study in the Strait of Florida and the southern Gulf of Mexico indicated that habitat preferences from satellite tagged sailfish were primarily within the upper 20-50m of the water column. Sailfish grow rapidly and reach a maximum size of 160cm for males and 220cm for females; females reach maturity at 155cm and the species reach a maximum age of at least 17 years. Sailfish spawn over a wide area, but evidence of spawning has been detected in the Straits of Florida amongst other areas.

The most recent stock assessment for sailfish was carried out by ICCAT in 2009 (ICCAT, 2010). There remains considerable uncertainty regarding the status of both eastern and western stock, but most model results suggest overfishing of these stocks and that they are overfished, more so for the eastern stock than the west (ICCAT, 2010). There have been problems with data reporting to ICCAT as with the other billfish species; both historically and at present, catches of sailfish are reported together with spearfish by many longline fleets and in some cases not reported at all. ICCAT considers both eastern and western stocks to have been reduced to levels below  $B_{MSY}$ . There is considerable uncertainty on the level of reduction particularly for the western stock, as various production models have indicated  $B_{MSY200}/B_{MSY}$  levels to be both above and below 1.0. Similar uncertainty exists for estimated fishing mortality levels which are considered to possibly be  $>1$  for the western stock.

NMFS considers stocks the West Atlantic stock to be overfished and suffering from overfishing (Table 15).

## Billfish management

The 1988 Atlantic Billfish FMP initiated US efforts to reduce mortality of Atlantic billfish. This plan implemented the following management measures:

- A prohibition on the sale of Atlantic billfish
- Establishment of minimum sizes for Atlantic blue marlin, white marlin and sailfish for recreational fisheries
- A prohibition on the possession of Atlantic billfish by commercial longline and driftnet vessels
- Establishment of data reporting requirements

Interim rules (in 1998) and amendments to the FMP (in 1999) relevant to pelagic longlines MSFCMA included:

- further increase in the minimum size for Atlantic blue marlin to 99 inches LJFL
- restatement of the minimum size for Atlantic white marlin 66 inch
- prohibition on the retention of longbill spearfish
- allowance for removal of hooks from Atlantic billfish (this had previously been prohibited)
- development and implementation of outreach programs

Measures were also established in the recreational fishery including a recreational bag limit of one Atlantic marlin (blue or white marlin) per vessel per trip; which included adjustment to zero if required to meet international and domestic management objectives.

Roundscale spearfish have effectively been managed as white marlin (with the same size limit and authorized gear as white marlin) due to difficulties in identification and distinguishing them from white marlin and because roundscale spearfish weren't known to exist prior to 2006. In 2010 NMFS published an interpretive rule and final action (75 FR 57698) which amongst other things recognised roundscale spearfish to the definition of terms in the implementing regulations of the MSFCMA and the Atlantic HMS regulations (NMFS, 2010a).

ICCAT made its first binding recommendation for Atlantic blue and white marlin in 1997 (Recommendation 97-09) which required reductions in landings of at least 25 percent from 1996 levels by the end of 1999 as well as improvements in data and monitoring of these two species. Due to continued overfishing of these species, ICCAT adopted Recommendation 00-13 in November 2000 which detailed a two-phased international rebuilding strategy for Atlantic blue and white marlin. Phase I of the plan required that countries (other than the US) capturing marlins in commercial fisheries reduce white marlin landings from pelagic longline and purse seine fisheries by 67 percent and blue marlin landings by 50 percent from 1999 levels.

In 2002, Phase I of the ICCAT Atlantic marlin rebuilding plan was extended through to 2005 by adoption of a further Recommendation (02-13) which amended the rebuilding program by specifying that, the annual amount of blue marlin to be harvested and retained by pelagic longline and purse seine vessels must be no more than 50 percent of the 1996 or 1999 landing levels, whichever is greater. For white marlin, the annual harvested and retained amount allowed by pelagic longline and purse seine vessels was to be no more than 33 percent of the 1996 or 1999 landing levels, whichever is greater. The US was already compliant with this recommendation due to measures brought in under the 1988 Atlantic billfish FMP. For ICCAT members other than the US, the plan required the release of all live marlins taken as bycatch in commercial fisheries, but provided an allowance for the landing of fish unavoidably killed, as long as they were not sold.

Recommendation 00-13 restricted annual landings by U.S. recreational fishermen to 250 Atlantic blue and white marlin, combined, for 2001 and 2002 (Phase I); this was subsequently extended through 2006. In response to the ICCAT rebuilding plan, the US agreed to continue limiting

recreational landings of Atlantic blue and white marlin to 250 fish annually, maintain its regulations prohibiting the retention of marlins by U.S. pelagic longline vessels, and continue monitoring billfish tournaments.

US reports Commercial dead discards and recreational billfish landings to ICCAT annually. In 2010, estimates of commercial dead discards for the US in total for blue marlin, white marlin and Atlantic sailfish were 17.2 mt, 7.6 mt and 4.2 mt respectively (NOAA, 2010) (Table 16). This mortality accounts for an estimated 5% of the mortality reported to ICCAT of Atlantic billfish stock; consequently, rebuilding of Atlantic billfish stocks requires measures similar to those applied in the US fleets to be implemented across other Atlantic fleets (NMFS, 1999).

Table 16 US (all fleets) versus International catch (t wet weight) during 2010 (NMFS, 2011)

Species	Total International Reported Catch	Region	Total Regional Catch	U.S. Catch	U.S. Percentage of Regional Catch	U.S. Percentage of Total Atlantic Catch
Atlantic Blue Marlin	3,160	North Atlantic	1,644	21	1.3%	0.67%
		South Atlantic	1,516	0	0%	
Atlantic White Marlin	372	North Atlantic	196	10	5.1%	2.7%
		South Atlantic	176	0	0%	
Atlantic Sailfish	3,396	West Atlantic	625	8	1.28%	0.24%
		East Atlantic	2,771	0	0%	

Since 2004 circle hooks have also been required for the entire PLL fishery (a measure brought in to mitigate sea turtle bycatch (see 3.4.2.4)). The shift to circle hooks in the directed Atlantic billfish fishery was seen as “the most effective single management tool” known to the Agency at the time “to control post release mortality, with the added benefit of having minimal impacts on the fishery” (FR 58058). A quantitative review of 11 empirical studies comparing effects of circle versus j-hooks on catch, mortality, deep-hooking and bleeding rates on a species-specific basis, found that when significant differences between hook types resulted, higher mortality rates and higher rates of deep-hooking and bleeding were associated with j hooks relative to circle hooks (Serafy et al, 2009). Tagging studies have also found that post-release survival rates for white marlin can range between 63 to 89 percent from pelagic longlines, indicating that current domestic and international management measures requiring the release of live white marlin from this fishery will reduce fishing mortality on the Atlantic-wide stock.

NMFS comparisons between reported catches of billfish in 2001-03 and 2005-10 with those in 1997-99, show that discards have declined for blue marlin by 49.7 and 60.8 percent; for white marlin by 47 and 60.9 percent and for sailfish by 74.6 percent and 68.3. percent respectively (NMFS, 2011). These declines are greater than was predicted in the regulatory Amendment 1 (NMFS, 1999), even when re-distribution of effort from the closed areas was included in the predictions. Spearfish discards also declined but to a lesser extent than for other billfish.

Catches of billfish within the area of certification are reasonably low (~6000 caught across 7 years between 2005-11). White marlin is the most commonly caught (~2900 numbers reported caught) of the billfish species across all areas, but there are noticeable variations in billfish catch composition amongst areas. Approximately 50% of white marlin are caught in the MAB, while ~60% of reported blue marlin catch is in the FEC. The greatest numbers of Atlantic sailfish are spread more evenly between the FEC and SAB areas, and spearfish are reported in greatest numbers in the FEC and NEC/SAR areas. A relatively large proportion of billfish caught by the fishery have been reported and observed as released alive (~65-75% and 75-85% respectively).

## Shark Management

Development of a FMP for sharks dates back to 1989, when the five Fishery Management Councils established by the MFCMA indicated that there was a critical need for an Atlantic shark FMP due to increasing commercial fishing pressures and the biological characteristics of sharks. The councils requested the Secretary develop a shark Fishery Management Plan (FMP) that would: (1) cap the growth of the commercial fishery; (2) establish a recreational bag limit; (3) eliminate finning; and (4) initiate a shark fishery data collection program. In the finalised FMP for Sharks of the Atlantic Ocean (NMFS, 1993), species in the management unit were chosen for one or more of the following reasons:

1. they are frequently caught in commercial or recreational fisheries;
2. their low fertility and/or slow growth make them particularly vulnerable to overfishing;
3. their habits make them vulnerable to indiscriminate killing.

and separated into three species groups for abundance assessments based on fisheries or where the species appear in the landings, rather than on ecological groups (Table 17).

Table 17 Sharks in the 1993 FMP Management Unit, by Species Groups

<u>Large Coastal Sharks</u>	
Sandbar	<i>Carcharhinus plumbeus</i>
Blacktip	<i>Carcharhinus limbatus</i>
Dusky	<i>Carcharhinus obscurus</i>
Spinner	<i>Carcharhinus brevipinna</i>
Silky	<i>Carcharhinus falciformis</i>
Bull	<i>Carcharhinus leucas</i>
Bignose	<i>Carcharhinus altimus</i>
Narrowtooth	<i>Carcharhinus brachyurus</i>
Galapagos	<i>Carcharhinus galapagensis</i>
<b>Night</b>	<b><i>Carcharhinus signatus</i></b>
Caribbean reef	<i>Carcharhinus perezii</i>
Tiger	<i>Galeocerdo cuvieri</i>
Lemon	<i>Negaprion brevirostris</i>
Sand tiger	<i>Odontaspis taurus</i>
Bigeye sand tiger	<i>Odontaspis noronhai</i>
Nurse	<i>Ginglymostoma cirratum</i>
<b>Scalloped hammerhead</b>	<b><i>Sphyrna lewini</i></b>
Great hammerhead	<i>Sphyrna mokarran</i>
Smooth hammerhead	<i>Sphyrna zygaena</i>
Whale	<i>Rhincodon typus</i>
Basking	<i>Cetorhinus maximus</i>
White	<i>Carcharodon carcharias</i>
<u>Small Coastal Sharks</u>	
Atlantic sharpnose	<i>Rhizoprionodon terraenovae</i>
Caribbean sharpnose	<i>Rhizoprionodon porosus</i>
Finetooth	<i>Carcharhinus isodon</i>
Blacknose	<i>Carcharhinus acronotus</i>
Smalltail	<i>Carcharhinus porosus</i>
Bonnethead	<i>Sphyrna tiburo</i>
Atlantic angel	<i>Squatina dumerili</i>
<u>Pelagic Sharks</u>	
<b>Shortfin mako</b>	<b><i>Isurus oxyrinchus</i></b>
<b>Longfin mako</b>	<b><i>Isurus paucus</i></b>
Porbeagle	<i>Lamna nasus</i>
Thresher	<i>Alopias vulpinus</i>
<b>Bigeye thresher</b>	<b><i>Alopias superciliosus</i></b>
Blue	<i>Prionace glauca</i>



Oceanic whitetip	<i>Carcharhinus longimanus</i>
Sevengill	<i>Heptanchias perlo</i>
Sixgill	<i>Hexanchus griseus</i>
Bigeye sixgill	<i>Hexanchus vitulus</i>

In 1999, the 1993 FMP was amended to include swordfish and tunas in the 1999 FMP for Atlantic tunas, swordfish, and sharks (NMFS 1999).

This amendment established a number of shark specific initiatives:

- Allow retention of only those shark species known or expected to be able to withstand specified levels of fishing mortality
- Change the system of opening and closing shark fisheries and make seasonal quota adjustments
- Create a new management unit of deepwater/other sharks and extend the anti-finning prohibition to this management unit
- Count dead discards and state landings after federal closures against federal quotas for all sharks
- Change the quotas for pelagic and small coastal sharks and establish separate quotas for porbeagle and for blue sharks
- Dissolve the Shark Operations Team

The first of these lead to the prohibition of retaining the following species: Whale, basking, sand tiger, bigeye sand tiger, white, dusky, **night**, bignose, Galapagos, Caribbean reef, narrowtooth, **longfin mako**, **bigeye thresher**, sevengill, sixgill, bigeye sixgill, Caribbean sharpnose, smalltail, and Atlantic angel sharks. The rule came into effect in 2000.

The FMP was further amended in 2003 (NMFS 2003) and then further consolidated with its amendments and the Atlantic Billfish FMP and associated amendments in the 2006 Consolidated Atlantic HMS FMP (NMFS 2006). Since 2006 the Consolidated HMS FMP has been amended five times; Amendment 2 in 2008 (NMFS 2008a and NMFS 2008b), Amendment 3 in 2010 (NMFS, 2010) and the latest, Amendment 5 in 2011 (NMFS, 2011) implemented various shark specific measures in response to changes in stock status or new information or requirements in line with ICCAT. Measures implemented in 2008 Amendment of HMS FMP included collecting shark life history information via the implementation of a shark research program, and implementing time/area closures recommended by the South Atlantic Fishery Management Council.

Development of Amendment 5 to the Consolidated HMS FMP (NMFS, 2011; NMFS 2012) is ongoing and is in response to the results of several recent shark stock assessments, and will mainly deal with species in the large coastal shark (LCS) and small coastal shark (SCS) complexes. The first assessment was initially published in a peer-reviewed professional journal and later reviewed by NMFS scientists (see scalloped hammerhead shark summary) and adopted as a stock assessment for use in domestic shark management (76 FR 23794; April 28, 2011). While not an amendment to the Consolidated HMS FMP, NMFS has also published a final rule (76 FR 53652, August 29, 2011) to implement ICCAT recommendations 10-07 and 10-08 which prohibit the retention, transshipping, landing, storing, or selling of hammerhead sharks in the family Sphyrnidae (except for bonnethead sharks, *Sphyrna tiburo*) and oceanic whitetip sharks (*Carcharhinus longimanus*) caught in association with fisheries managed by ICCAT (NMFS, 2012).

The following text briefly introduces ecology and summarises stock status for the main elasmobranch bycatch species selected for scoring in the assessment.

**Blue shark (*Prionace glauca*)**

Blue sharks are pelagic, oceanic sharks occurring in both temperate and tropical waters, but preferring cooler waters of between 12-20°C. It is found from the surface to depths of about 350m and often at greater depths in tropical waters. It occasionally occurs close inshore where the continental shelf is narrow. Blue sharks are relatively fast-growing and fecund, maturing in 4–6 years and reach a maximum size of about 380 cm total length. About 50% of males in the Atlantic are sexually mature by 218 cm, although some may reach maturity as small as 182 cm. Females are sub-adult from 173-221 cm and fully mature from 221 cm, although pregnant fish as small as 183 cm have been recorded from the eastern Pacific. This species is placentally viviparous, producing litters averaging about 35 (maximum recorded 135) after a gestation period of 9-12 months. Ageing studies suggest a longevity of about 20 years with males maturing at 4-6 and females at 5-7 years. Smith et al. (1998) estimated the intrinsic rate of population increase at MSY to be 0.061.

Blue Sharks are highly migratory with complex movement patterns and spatial structure related to reproduction and the distribution of prey. There tends to be a seasonal shift in population abundance to higher latitudes associated with oceanic convergence or boundary zones as these are areas of higher productivity. Tagging studies of blue sharks have demonstrated extensive movements of blue sharks in the Atlantic with numerous trans-Atlantic migrations which are probably accomplished by swimming slowly and utilising the major current systems. Substantial data from the North Atlantic on the distribution, movements and reproductive behaviour of different segments of the population suggest a complex reproductive cycle. This involves major oceanic migrations associated with mating areas in the north-western Atlantic and pupping areas in the north-eastern Atlantic.

The diet of Blue Sharks consists mainly of small pelagic fish and cephalopods, particularly squid; however, invertebrates (mainly pelagic crustaceans), small sharks, cetaceans (possibly carrion) and seabirds are also taken. While most of the fish prey is pelagic, bottom fishes also feature in the diet. Blue sharks are known to feed throughout the 24-hour period but have been reported to be more active at night, with highest activity in the early evening (Stevens, 2009).

Blue sharks are one of the more productive species of pelagic sharks, with one of the highest estimated intrinsic rates of increase,  $r$ , of 0.3 and an overall vulnerability ranking (which combines productivity with susceptibility based on the product of availability, encounterability, selectivity and post-capture mortality) of 10 out of 12 species assessed (Cortes et al., 2008).

Although highly uncertain, the results for the North Atlantic blue shark stocks, although the results are highly uncertain, indicate that the biomass is believed to be above the biomass that that would support MSY and current harvest levels below FMSY (Table 18). Results from all models used in the 2008 assessment (Anon. 2009c) were conditional on the assumptions made (e.g., estimates of historical catches and effort, the relationship between catch rates and abundance, the initial state of the stock in the 1950s, and various life-history parameters), and a full evaluation of the sensitivity of results to these assumptions was not possible during the assessment. Nonetheless, as for the 2004 stock assessment (Anon. 2005c), the weight of available evidence does not support hypotheses that fishing has yet resulted in depletion to levels below the Convention objective

In 2010, estimates of dead discards for blue shark amounted to almost 164 mt ww, the largest amount of any shark species discarded by the entire US fleet (NOAA, 2011). However, this represents a small proportion of the total north Atlantic catch and entire Atlantic catches (Table 19). In addition to this, data from the fishery under assessment for the last 7 years indicate a relatively high rate of sharks being released alive (~80% in both reported and observations) after capture.

Table 18 Stock Assessment summary table – taken from 2011 SAFE Report for Atlantic HMS.

Species	Current Relative Biomass Level	Minimum Stock Size Threshold (MSST)	Current Relative Fishing Mortality Rate	Maximum Fishing Mortality Threshold	Outlook – from Status of Stocks for US managed species
Blue shark	$B_{05}/B_{MSY}=1.87-2.74$	$(1-M)B_{MSY}$	$F_{07}/F_{MSY}=0.13-0.17$	$F_{MSY}=0.15$	Not overfished; overfishing not occurring
Scalloped Hammerhead Sharks	$N_{05}/N_{MSY}=1.29$	$(1-M)B_{MSY}$	$F_{05}/F_{MSY}=0.45$	0.11	Overfished; overfishing is occurring

Table 19 US (all fleets) versus International catch (t wet weight) during 2010 (NMFS, 2011)

Species	Total International Reported Catch	Region	Total Regional Catch	U.S. Catch	U.S. Percentage of Regional Catch	U.S. Percentage of Total Atlantic Catch
Blue shark	65,183	North Atlantic	37,238	8	0.02	0.01
		South Atlantic/Med	27,945	0	0	

**Night shark (*Carcharhinus signatus*)**

The night shark is a medium-sized shark (maximum reported size 276 cm total length) characterized by a gray blue body with a long snout, an interdorsal ridge, and large green eyes. Night sharks are an oceanic species generally occurring in outer continental shelf waters in the northwest Atlantic Ocean from Delaware south to the Florida Straits including the Caribbean Sea and Gulf of Mexico (Carlson et al. 2008). It is a deep water species found at 275 - 365 m during the day that migrates up in the water column at night to depths around 185 m. Night shark maximum size is 280 cm total length and maximum weight is 76.7 kg and they live up to 17 years. Sexual maturity of a female is at 200 cm total length; males are mature at about 190 cm. Little is known about the reproductive biology of this species: breeding is believed to occur in the summer, and they are viviparous (placental live birth). Litter size ranges from 12-18 pups of 10-60 cm total length. Night sharks forage primarily on squids, small fishes, and shrimp.

Quantitative biological information (e.g., age, growth, longevity, age-at-maturity) for night shark stocks off the US east coast and Gulf of Mexico are lacking, and this has prevented the development of any type of demographic models to predict the productivity of the stock. It is currently listed as a Prohibited Species (NMFS, 1999) but was originally petitioned and added to the Candidate Species List under the Endangered Species Act in 1997. NMFS identified the night shark as an ESA candidate species due to alleged declines in abundance resulting from fishing effort (Carlson et al., 2008). On 15 April 2004, NMFS announced the establishment of a species of concern list, a description of the factors that it will consider when identifying species of concern, and revision of the ESA Candidate Species List. NMFS transferred 25 candidate species, including night sharks, to the species of concern list. Although information from some fisheries has shown a decline in catches of night sharks, it is unclear whether this decline is due to changes in fishing tactics, markets, species identification or real population declines. Furthermore, no studies have estimated the demography and productivity of the night shark, which is necessary in its evaluation as a species of concern.

In 2008 Carlson et al. (2008) collated available information on the night shark to provide an analysis of its status relevant to the species of concern list. They found that average size information has not changed considerably since the 1980's based on information from the pelagic longline fishery when corrected for gear bias. Analysis of biological information indicated that night sharks have intrinsic rates of increase ( $r$ ) about  $10\% \text{ yr}^{-1}$  and have moderate rebound potential and an intermediate generation time compared to other sharks. An analysis of trends in relative abundance from four data sources gave conflicting results, with one series in decline, two series increasing, and one series relatively flat. Based on the analysis of all currently available information, Carlson et al., (2008) concluded that the night shark does not qualify as a species of concern but should be retained on

the prohibited species list as a precautionary approach to management until a more comprehensive stock assessment can be conducted.

### **Scalloped hammerhead shark (*Sphyrna lewini*)**

There are nine species of hammerhead shark (family Sphyrnidae). As a group, they tend to be less oceanic than many of the other pelagic shark species, but are widely distributed in coastal and continental shelf waters in warm-temperate and tropical seas (Camhi et al., 2009). It has been observed close inshore and even entering estuarine habitats, as well as offshore to depths of 1000m. The pups of this species tend to stay in coastal zones, near the bottom, occurring at high concentrations during summer in estuaries and bays. Horizontal migration is observed from inshore bays to a pelagic habitat as the sharks grow, with species segregating by sex, the females migrating offshore earlier and at smaller sizes than males (Baum et al., 2012). The species is viviparous with a yolk-sac placenta, females pup every year with a gestation period of around 9-12 months. The average number of pups ranges from 12-41 and pup size ranges from 31-57 cm (Baum et al. 2012). Maximum size is reported to range from 219-340 cm TL for males and 296-346 cm for females. Males mature between 140- 198 cm TL and females at around 210-250 cm total length (Baum et al., 2012).

In October 2009, Hayes et al. (2009) published a stock assessment of the Atlantic population of scalloped hammerhead sharks in U.S. waters. The stock assessment utilized a surplus production model, an approach commonly used in data poor scenarios, and incorporated commercial and recreational landings, fisheries dependent data, fisheries independent data from NMFS observer programs, and scientific surveys. Bootstrapped parameter values showed that in 2005 the probability of the scalloped hammerhead's being overfished was greater than 95% (the population was estimated to be 45% of that which would produce the maximum sustainable yield [MSY]) and a 73% probability that overfishing was occurring (fishing mortality was approximately 129% of that associated with the MSY). The size of this population was estimated to be 17% of what it had been in 1981, that is, it has been depleted by about 83% from the virgin stock size. Monte Carlo simulation predicted that the population had a 58% probability of rebuilding in 10 years if the 2005 catch level (4,135 individuals) were maintained and an 85% probability of rebuilding if the 2005 total catch were halved (Hayes et al., 2009). Previously, NMFS had assessed scalloped hammerhead sharks as part of the LCS complex. The LCS complex currently has an unknown status (NMFS, 2012).. NMFS reviewed the Hayes et al. (2009) assessment paper and concluded that: the assessment is complete; it is an improvement over a 2008 aggregated species assessment for hammerhead sharks; and it is appropriate for U.S. management decisions (76 FR 23794; April 28, 2011). Based on the results of this paper, NMFS determined on April 28, 2011 that scalloped hammerhead sharks were overfished and experiencing overfishing (76 FR 23794) (NMFS, 2012). As a result, NMFS must implement management measures to end overfishing and rebuild scalloped hammerhead sharks and a review of these measures is currently ongoing through development of Amendment 5 of the Consolidated HMS FMP (NMFS, 2012).

The stock assessment estimated that a Total Allowable Catch of 2,853 scalloped hammerhead sharks (approximately 79.6 mt, calculated using an average dressed weight of 61.5 lb per shark) would allow for a greater than 70 percent probability to rebuild the stock within 10 years. NMFS has therefore proposed to establish a separate Annual Catch Limit and Accountability Measures for the scalloped hammerhead shark stock, and establish an annual Total Allowable Catch of 2,853 scalloped hammerhead sharks to allow rebuilding of the stock within 10 years. This Total Allowable Catch includes landings and discards of scalloped hammerhead sharks in all fisheries that interact with scalloped hammerhead sharks (NMFS, 2012). As retention of this species has been implemented for the PLL, estimates of dead discards from this fishery will be taken into account in any quota developed.

According to NMFS POP data from 2005-2009, 55 percent of hammerhead sharks caught are alive when brought to the vessel. However, some studies in the literature note much higher at-vessel

mortality rates. (NMFS, 2012).. Data from the fishery under assessment indicate observed dead discards have ranged from 30-60% of total catches between 2005 and 2011, but have been 50% or below since 2009.

The United States has proposed that six shark species be listed in Appendix II, for consideration at the fifteenth meeting of the Conference of the Parties to CITES (CoP15) held during March 2010 in Doha, Qatar. The proposed species included scalloped hammerhead (*Sphyrna lewini*); along with "look alike" species great hammerhead (*S. mokarran*); smooth hammerhead (*S. zygaena*). The United States submitted these proposals due to concerns that over-exploitation to supply the international fin trade is negatively impacting the population status of these sharks, as the fins of these six shark species are among the most valuable in trade. These proposals were defeated at CoP15 (NMFS, 2011).

#### **Bigeye thresher shark (*Alopias superciliosus*)**

The bigeye thresher is considered to be a highly migratory, oceanic and coastal shark found virtually circumglobally in tropical and temperate seas. Bigeye thresher sharks range from the surface and intertidal depths to at least 500 m depth and has been recorded to 723 m, but mostly occurs below 100 m depth (Amorium et al, 2012). These sharks spent most of the nighttime in waters warmer than 20°C and commonly spent eight or more hours during the daytime in waters cooler than 10°C, requiring them to be eurythermal. Nakano et al. (2003) undertook acoustic tracking of this species in the eastern Pacific Ocean.

Of the thresher sharks, the Bigeye Thresher has the lowest rate of annual increase, estimated at 1.6% under sustainable exploitation or 0.002-0.009 (Cortés 2008). The gestation period is 12 months with average litter sizes 2-4 pups/litter, and size at birth ranges from 64 to 140 cm total length. Estimated age at maturity is years 12-13 (females), 9-10 years (males) and longevity is estimated at 20 years for females (19 years for males). Males mature at 270-300 cm total length (total length) and females at 332-355 cm total length (Amorium et al, 2012). The maximum recorded size of bigeye thresher is 461 cm total length.

Reported diet consists of pelagic bony fishes including scombroids, clupeoids and small billfishes; hake and cephalopods (Compagno 2001). Uses its tail to stun the pelagic fishes on which it feeds (Amorium et al, 2012). Like many other species of sharks, bigeye threshers segregate by size and sex.

This species is thought to be especially vulnerable to fisheries exploitation (target and bycatch) as its epipelagic habitat occurs within the range of many largely unregulated gillnet and longline fisheries in which it is readily caught, and it has been fished throughout its range.

#### **Longfin mako shark (*Isurus paucus*)**

Very little is known of the longfin mako shark biology. It is an epipelagic, tropical and warm-temperate shark and is apparently a deep-dwelling shark, however, both sightings on the ocean surface and the species diet suggest a much greater depth range. Information on life history parameters is especially poor, with age at maturity, longevity, average reproductive age and periodicity and natural maturity all unknown. It is aplacental viviparous with oophagy and uterine cannibalism, and a pregnant female may have 2 to 8 embryos at one time. Females and males have been reported as mature at >245 cm total length; the smallest mature male observed has been 229 cm total length and maximum size is around 425 cm total length. The rate of annual increase for longfin mako has been estimated at 0.014 by Cortes et al., (2008).

#### **Stock status of bigeye thresher and longfin mako sharks**

These two species are assessed as part of the pelagic shark complex by NMFS and retention of both is prohibited in both commercial and recreational fisheries in the US.

An ICCAT ecological risk assessments for 11 priority species of sharks (including blue shark and shortfin mako) demonstrated that most Atlantic pelagic sharks have exceptionally limited biological productivity and, as such, can be overfished even at very low levels of fishing mortality (Cortes et al., 2008). Specifically, the analyses indicated that both bigeye threshers and longfin makos have the highest vulnerability (and lowest biological productivity) of the shark species examined (with bigeye thresher being substantially less productive than the other species). Longfin mako and bigeye thresher are in need of improved biological data to evaluate their biological productivity more accurately and thus specific research projects should be supported to that end. These species are currently assessed Vulnerable globally by IUCN.

Dead discards of bigeye thresher and longfin mako were estimated at ca. 27 and 26 mt ww respectively in 2010 for the US PLL fleet (NOAA, 2011). The percentage of bigeye thresher and longfin mako sharks caught in the fishery under assessment which were observed discarded dead averaged 60% and 50% respectively between 2005-2011 (NMFS POP data).

### **Pelagic ray (*Pteroplatytrygon violacea*)**

This species is one of the most productive of the live-bearing elasmobranchs; its annual rate of increase of 31% is more than triple that of some of the Threatened oceanic sharks and rays. It therefore has a higher capacity to withstand fishing pressure (Dulvy et al. 2008).

Pelagic stingrays are currently of little commercial value and are discarded in most areas. Survival rates are thought to be low because the rays usually sustain serious jaw damage during release. As a result, stocks of this species should be monitored to ensure this species remains within the Least Concern category.

The pelagic stingray is widespread, with an almost circumglobal distribution, throughout tropical and subtropical areas of the Pacific, Atlantic and Indian Oceans. It is perhaps the only species of stingray that occurs in pelagic, oceanic waters and is usually found from the surface to 100 m depth over deep water, but has been reported to 238 m. It is a relatively small ray, attaining a maximum size of 80 cm disc width (DW) (Baum et al., 2012). Females reach maturity at 39-50 cm DW, and males similarly at 37-50 cm DW. Females mature at 3 years, males mature at 2 years and longevity is about 10 years. Reproduction is viviparous with histotrophy and the gestation period is less than 2-4 months, with females giving birth to 4-13 pups per litter, and newborn stingrays measuring approximately 14.3-24.1 cm DW (mean range) (Baum et al., 2012).

The species is taken as bycatch in pelagic longline fisheries around the world and mostly discarded. Data from pelagic longline fisheries in the Southwest Atlantic show that the proportion of males in the captures is greater than females (ratio of 1.8:1 (n=1317)). Conversely, other data available for the eastern Pacific and western Atlantic Oceans indicate that there is a significantly higher ratio of females to males observed (Baum et al., 2012). Post-discard survival rates are thought to be low in some areas because the fish are often discarded with serious mouth and jaw damage. However, observer data from the fishery under assessment from 2005-2011 indicate the proportion of these rays caught discarded dead is relatively low, ranging from 10-30% over the time period.

Analyses of research surveys conducted with pelagic longlines in the 1950s and recent (1990s) observer data from commercial pelagic longline fisheries suggest increases in CPUE in the tropical Pacific Ocean and Northwest Atlantic (Camhi et al., 2009). Although there is some debate as to consistency of reporting of pelagic stingrays in fisheries statistics and data are lacking from several areas of the species' range, there are no data to suggest that significant declines have occurred in this species (Camhi et al., 2009) and it. Increasing fishing effort in pelagic fisheries, owing to decreasing abundance of target species (swordfish and tunas), will result in an increase in catches of this species and associated high discard mortality in some areas. Careful monitoring is therefore required. However, given increasing trends observed in some regions and this species' widespread

distribution, and in the absence of evidence to suggest significant declines, it is currently assessed as Least Concern globally by IUCN.

### 3.4.3 ETP Species

A number of protected marine mammals and sea turtles occur off the Atlantic coast of the US. Data collected by observers at-sea from 2005-2011 provide evidence of bycatch of eight identified marine mammal species, three sea turtle species, and five sea bird species. The following sections detail the catch details of ETP species associated with the pelagic longline fishery in the US Atlantic, the population and stock status of these species, and the national and international legislation in place to manage these species.

A Pelagic Observer Program for the pelagic longline fishery has been in place since 1992 to document finfish bycatch, characterize fishery behaviour, and quantify interactions with protected species. In addition, a mandatory fishery logbook system (FLS) has also been in place since 1992, and requires vessel captains to report fishing effort, gear characteristics, and commercial data. These data are used to generate annual estimates of marine mammal and turtle bycatch.

#### 3.4.3.1 Marine mammals

##### ***International Treaties***

Of the marine mammal species caught by the pelagic longline fishery only long-finned pilot whales and Risso's dolphins are caught with regularity. Cites considers long-finned pilot whales in Appendix II, for species that are not necessarily now threatened with extinction but that may become so unless trade is closely controlled. CITES considers long-finned pilot whales as Lower Risk - least concern (CITES 2012). CITES also considers Risso's dolphin in Appendix II and as Lower Risk - conservation dependent.

ICCAT has no specific marine mammal protection measures, but does require that member and non-member cooperating parties establish observer programs to collect data that quantify bycatch (including sharks, sea turtles, marine mammals, and seabirds) and report this information to the SCRS (ICCAT Rec 10-10); and that CPCs shall provide existing identification guides for sharks, seabirds and turtles and marine mammals caught in the Convention Area to the ICCAT Secretariat, and the Secretariat shall request subregional RFMOs to provide the Commission with relevant identification guides. The Secretariat shall share these guides with the T-RFMO Technical Working Group on Bycatch, as appropriate (Rec 11-10).

##### ***National Legislation***

Some marine mammals in US waters are protected by the Endangered Species Act (ESA) of 1973, although none of the species listed as bycatch in the pelagic observer program data from 2005-2011 are listed on the ESA. All marine mammals in US waters are protected by the Marine Mammal Protection Act (MMPA) of 1972.

The MMPA provides marine mammal species protection and conservation policy in the US. Amendments to this law in 1994 established a three-part strategy to govern interactions between marine mammals and commercial fishing operations which include the preparation of marine mammal stock assessment reports, registration and marine mammal mortality monitoring program for certain commercial fisheries (Category I and II), and the preparation and implementation of take reduction plans (TRPs). NMFS relies on both fishery-dependent and fishery-independent data to produce stock assessments for marine mammals in the Atlantic.

The marine mammal stock assessment reports are prepared by NMFS, and include:

- a description of the stock's geographic range,
- a minimum population estimate,
- current population trends,
- current and maximum net productivity rates,
- Potential Biological Removal levels,
- status of the stock,
- estimates of annual human-caused mortality and serious injury by source, and
- descriptions of other factors that may be causing a decline or impeding the recovery of strategic stocks (NMFS 2012a).

Potential biological removal (PBR) is defined by the MMPA as the maximum number of animals, excluding natural mortalities, which may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population. Amendments to the MMPA in 1994 also established a goal that the level of incidental mortality and serious injury of marine mammals during the course of commercial fishing operations be reduced to insignificant levels approaching a zero rate, known as the Zero Mortality Rate Goal (ZMRG) and defined as less than 10% of PBR, within seven years of enactment.

When PBR for a stock is exceeded, the stock is considered to be 'strategic.' Stocks are also deemed to be 'strategic' if they are listed as threatened or endangered under the ESA, listed as depleted under the MMPA, or declining and likely to be listed as threatened under the ESA within the foreseeable future. For strategic stocks, NMFS reviews stock assessment reports annually while non-strategic stocks are reviewed every three years or when new information becomes available. If a review shows that the status of the stock has changed or can be assessed more accurately, NMFS revises the report in consultation with the Scientific Review Groups and after public review and comment.

Under MMPA requirements, NMFS produces an annual List of Fisheries (LOF) that classifies domestic commercial fisheries by gear type, relative to their rates of incidental mortality or serious injury of marine mammals. Serious injury has been defined as an injury more likely than not to result in mortality. There are three categories for the list LOF as follows:

- Category I fisheries are those with frequent serious injury or mortality to marine mammals;
- Category II fisheries are those with occasional serious injury or mortality; and
- Category III fisheries are those with remote likelihood of serious injury or mortality to marine mammals.

Criteria were originally developed at a workshop in 1997 (Angliss and DeMaster 1998). These criteria were reviewed in 2007, and a policy for determining serious or non-serious injury in marine mammals with associated criteria were established in 2012 (NMFS 2012 c, d). Serious injury determinations are now made on a case by case basis based on observations and comments by fishery observers.

Section 118 of the MMPA requires the National Oceanic and Atmospheric Administration (NOAA), the agency responsible for protecting the majority of marine mammal species in US waters, to create Take Reduction Teams (TRTs) in response to high bycatch of marine mammals in commercial fisheries that operate in US waters. A TRT is responsible for reducing serious injury and mortality of marine mammal stocks in commercial fisheries to levels below PBR within six months after it has been convened. TRTs rely heavily on the data collected from at-sea observers.

NMFS has implemented a series of actions designed to protect marine mammals (NMFS 2012):

- Stock assessments of marine mammals. NMFS prepares annually marine mammal stock assessment reports (SARs). NMFS reviews reports for "strategic stocks" of marine mammals



annually. For non-strategic stocks, reports are reviewed every three years, or when new information becomes available.

- Establishing Take Reduction Teams as necessary. The Marine Mammal Protection Act (MMPA) section 118 specifies that NOAA's National Marine Fisheries Service (NMFS) develop and implement take reduction plans (Plans) to assist in the recovery or prevent the depletion of strategic marine mammal stocks that interact with Category I and II fisheries. NMFS convenes take reduction teams (Teams) to develop such plans. Take reduction teams consist of a balance of representatives from the fishing industry, fishery management councils, state and Federal resource management agencies, the scientific community, and conservation organizations.
- Marine Mammal Health and Stranding Response Program. The program has the following components: stranding networks; responses/investigations of mortality events; biomonitoring; tissue/serum banking; and analytical quality assurance
- Conservation plans. The NOAA Fisheries Acoustics Program is investigating all aspects of marine animal acoustic communication, hearing, and the effects of sound on behavior and hearing in protected marine species. Specifically, the program is developing acoustic exposure policy for NOAA and supporting research in a variety of areas to address critical data needed to improve and expand these criteria (working directly with NOAA Fisheries Office of Science and Technology)
- Undertaking ecosystem science. Under the Marine Mammal Protection Act (MMPA), conservation plans are required for species that have been designated as "depleted".
- International Marine Mammal Action Plan. The Marine Mammal Protection Act (MMPA) mandates that NOAA's National Marine Fisheries Service (NMFS) protect and conserve marine mammals both domestically and internationally, and manage impacts of U.S. activities on them, including negotiating with other nations to protect and conserve all marine mammals.

### ***Catches and stock status of marine mammals interacting with the Fishery under Assessment***

Most marine mammal bycatch in the US pelagic longline fishery in the Atlantic occurs between South Carolina and Cape Cod. According to observer program data for the Atlantic pelagic longline fishery, pilot whales in the Mid Atlantic Bight (MAB) were the most frequently bycaught marine mammal species, with 79 total animals caught from 2005 to 2011 (Table 200). Sixty-seven were reportedly released alive and three discarded dead; the condition of nine was unknown. Risso's dolphins in the NCA/SAR/NEC/NED areas were the next most frequently caught marine mammal, followed by Risso's dolphins in the MAB. While the majority of incidentally caught dolphins were released alive according to observer reports, there is a high likelihood that ingested gear or entanglement around appendages will impede survival (Wells et al. 2008).

Due to uncertainty in species identification by fishery observers, total fishery-related mortality and serious injury for long- and short-finned pilot whales was not estimated separately through 2011, and thus, are provided as combined estimates. The Atlantic Scientific Review Group advised adopting a risk-averse strategy of assuming that either species might have been subject to the observed fishery-related mortality and serious injury (NMFS 2011a).

Long-finned pilot whales are considered 'strategic,' while short-finned pilot whales are not. Based on the most recent stock assessment report (2011), PBR for long-finned pilot whales is 93 whales (NMFS 2011a), while for short-finned pilot whales it is estimated at 172 whales (NMFS 2011a). In all gear types from 2005-2009, total annual estimated average fishery-related mortality or serious injury for the two species combined was estimated to be 162 whales; 114 of these were attributed to longline gear (NMFS 2011a). For long-finned pilot whales, most mortality is attributed to the pelagic longline fishery, NE midwater trawl fishery (mortality of 3 animals was estimated), and NE groundfish fishery (mortality of 12 animals was estimated). For the short-finned pilot whales between 2005 and 2009, mortality is more likely to occur in the mid-Atlantic, with the pelagic

longline fishery accounting for 114 whales, the Mid-Atlantic midwater trawl for 2.4 whales, and the Mid-Atlantic groundfish for 30 whales.

New survey and biopsy research conducted in 2011 suggests that all pilot whales interacting with longline gear in the MAB are short-finned pilot whales. This new information, combined with new abundance estimates, leads to a likely decrease from 172 to 136 short-finned pilot whales for the 2013 stock assessments (Garrison et al. 2012). By attributing interactions in the Mid-Atlantic to short-finned pilot whales, it is likely that takes of long-finned pilot whales will decrease to levels below PBR. For short-finned pilot whales, the total fishery mortality currently does not exceed PBR, but it is unknown if this new information will change that in the 2013 stock assessment report. Currently, mortality estimates of both species is most likely not less than 10% of the calculated PBR and therefore cannot be considered to be insignificant and approaching zero mortality and serious injury rate.

Risso's dolphins are not strategic and not listed on the ESA. PBR of this species is 121 (NMFS 2012b). Estimated total average annual fishery-related mortality or serious injury to this stock was estimated to be 17 animals for all gear types between 2006 and 2010; 7.4 of these are attributed to pelagic longline gear (NMFS 2012b). While not deemed "strategic," the total US fishery mortality and serious injury for the stock is not less than 10% of PBR and therefore cannot be considered insignificant and approaching the ZMRG. Current information on stock structure of Risso's dolphins does not exist for the western North Atlantic. The stock could contain multiple demographically independent populations that should be considered distinct stocks; the current stock spans multiple eco-regions (Longhurst 1998; Spalding et al. 2007).

Table 20 Marine mammal bycatch in pelagic longline gear in the US Atlantic were derived from NMFS observer program data from 2005-2011. The stock status is listed for each species, including whether it is listed on the Endangered Species Act and whether the stock is considered strategic in the most recent NMFS stock assessment report. The year of the most recent stock assessment is listed in parentheses. The various fishing areas correspond to the NMFS Statistical Areas: MAB = Mid Atlantic Bight, NCA = North Central Atlantic, SAB = South Atlantic Bight, NEC = Northeast Coastal, NED = Northeast Distant, FEC = Florida East Coast.

Species	Stock Status	Fishing Area	Discarded dead	Discard alive	Lost or unknown	Total # animals
Marine mammal, unidentified species	N/A	MAB	1	5	1	7
		NCA/SAR/NEC/NED	0	2	0	2
Dolphin, unidentified species	N/A	MAB	0	1	1	2
		NCA/SAR/NEC/NED	0	1	0	1
Pilot whale	Not listed on ESA Long-finned: strategic (2011) Short-finned: not strategic (2011)	FEC	0	1	0	1
		MAB	3	67	9	79
		NCA/SAR/NEC/NED	0	3	0	3
Bottlenose dolphin	Not strategic (Western North Atlantic Offshore) (2008)	MAB	0	4	0	4
		NCA/SAR/NEC/NED	0	1	0	1
		SAB	0	3	0	3
Risso's dolphin	Not listed on ESA Not strategic (2011)	MAB	0	6	1	7
		NCA/SAR/NEC/NED	0	12	1	13
Common dolphin	Not listed on ESA Not strategic (2007)	MAB	1	0	0	1
Pygmy sperm whale	Not listed on ESA Not strategic (2007)	MAB	0	1	0	1
Atlantic spotted dolphin	Not listed on ESA Not strategic (2007)	NCA/SAR/NEC/NED	0	1	0	1
Beaked whale, species unidentified	None listed on ESA	NCA/SAR/NEC/NED	0	1	0	1
False killer whale	Not listed on ESA No stock report for US North Atlantic	NCA/SAR/NEC/NED	0	1	0	1
Minke whale	Not listed on ESA Not strategic (2011)	SAB	0	1	0	1

\*The closest minke whale stock assessment report is for the Canadian East Coast stock, which does not extend to the South Atlantic Bight. There is no stock assessment for the South Atlantic Bight so the stock status listed is for the Canadian East Coast stock.

In addition to Risso's dolphins and pilot whales, bottlenose dolphins are also caught in the US Atlantic pelagic longline fishery though at lower numbers. Eight animals were reportedly caught

between 2005 and 2011, and all were reportedly released alive. The Western North Atlantic Coastal stock of bottlenose dolphin is listed as 'depleted,' according to the MMPA, while the Western North Atlantic Offshore stock is not listed as 'depleted' or strategic. The former stock was divided into sixteen separate stocks of bottlenose dolphin, beginning after the 2008 stock assessment. Bycatch in pelagic longline gear is not considered a cause of serious injury and mortality in the stock assessment reports for the Coastal stocks. Interactions with the offshore stock have been attributed to the pelagic longline fishery (NMFS 2008). Two dolphins from this stock were reportedly caught in the fishery between 1992 and 2002, and released alive (Stacey Horstman, pers. comm., September 2012), while no mortalities or serious injuries were observed between 2002 and 2006 (NMFS 2008). PBR for this offshore stock is 566 animals. Since the offshore bottlenose dolphin stock is not strategic and bycatch is low, bottlenose dolphins were not included in the Take Reduction Team efforts discussed below or in the Bottlenose Dolphin Take Reduction Plan.

Due to incidental mortality and serious injury to marine mammals, primarily of long-finned pilot whales and short-finned pilot whales in the Mid Atlantic, the US Atlantic pelagic longline fishery is classified as a Category I fishery. Due to a settlement agreement between NMFS and several environmental organizations in 2003, NMFS agreed to convene the Pelagic Longline Take Reduction Team (PLTRT) in June 2005 for the Category I fishery. The PLTRT was formed to develop a Take Reduction Plan (PLTRP) to reduce bycatch of pilot whales in the Atlantic pelagic longline fishery to a level approaching a zero mortality and serious injury rate within 5 years of the plan's implementation (NOAA 2012). The TRP was finalized in 2009. The PLTRP is based on consensus recommendations submitted by the PLTRT to reduce serious injuries and mortalities of pilot whales and Risso's dolphins in the Atlantic pelagic longline fishery. The PLTRP is intended to meet the statutory mandates and requirements of the MMPA through both regulatory and nonregulatory measures, including a special research area, gear modifications, outreach material, observer coverage, and captains' communications (74 FR 23349).

The TRP implements a suite of management strategies to reduce mortality and serious injuries to pilot whales and also Risso's dolphins in the Atlantic pelagic longline fishery including three regulatory measures:

- A Cape Hatteras Special Research Area with specific observer and research participation requirements for fishing in the area
- A 20 nm (37.02 km) upper limit on mainline length for all pelagic longline sets within the MAB
- Requirement for an information placard on handling and release of marine mammals to be displayed in both the wheelhouse and on the working deck of all active pelagic longline vessels in the Atlantic fishery.

Non-regulatory measures include:

- Increased observer coverage in the MAB to 12-15 percent to ensure representative sampling of pilot whales and Risso's dolphins
- Encouraging vessels to communicate daily with other vessels regarding protected species interactions

From 2006-2008, observer coverage in the fishery was seven percent of pelagic longline sets (NMFS 2012b). In 2009, observer coverage increased to 14% and declined to 8% in 2010 (NMFS 2012b). Funding limits have not allowed NMFS to reach the recommended observer coverage in the MAB. The interaction rate with pilot whales in the Atlantic pelagic longline fishery has been high in the last two years (2011 and 2012) (Garrison et al. 2012). There has been little to no compliance with the regulatory measure in the PLTRP of setting a limit on mainline length of 20nm for pelagic longline sets (see text box). In sixty percent of observed sets, reported mainline lengths have exceeded 20 n mi and logbook data indicate that 40% of sets exceeded the 20 n mi limit (NMFS 2012b, c). The PLTRT, at a meeting in August 2012, strongly recommended that NMFS and NOAA Office of Law Enforcement find mechanisms to increase compliance with the mainline limit (NOAA 2012c); the

team recognized the need for compliance or for an alternate method to reduce impacts for successful implementation of the Take Reduction Plan.

#### **Limit on mainline length of 20nm for pelagic longline sets**

The Pelagic Longline Take Reduction Plan (PLTRP) calls for pelagic longline mainlines in the MAB region to not exceed 20 nautical miles in length. The Pelagic Longline Take Reduction Team (PLTRT) noted during its 2012 meeting that the “mainline length” effect has remained consistent with studies conducted through 2005, with mainline lengths less than 20 nautical miles expected to have lower interaction rates with pilot whales. However, the PLTRT noted there is little indication of changes in mainline length in observed sets despite the PLTRP requirement (NMFS 2012). Sixty percent of observed sets have reported mainline lengths greater than 20 nautical miles, with peaks in the 25 to 30 nautical mile range.

There is a significant discrepancy in post-TRP implementation distribution of mainline lengths as reported by the Observer Program versus the self-reported Fisheries Logbook System (FLS). Per the FLS, 25% of sets are self-reported as 20 nautical miles versus just 5% from the Pelagic Observer Program. Similarly, just 40% of sets are reported in the FLS as greater than 20 nautical miles versus 60% from Pelagic Observer Program data. NMFS presented information at the 2012 PLTRT meeting that suggested that the number of takes in 2011 would have been nearly 80% lower (62 animals rather than 298) if one applied the observed bycatch rate (catch per unit effort) from sets with mainlines less than 20 nautical miles in length within the mid-Atlantic Bight area and assumed that the number of hooks fished per area/quarter were unchanged. NMFS noted that: (1) observer coverage in 2011 did not differ significantly from earlier years; (2) the percentage of takes in sets with mainline lengths longer than 20 nautical miles appears consistent with data from earlier years; (3) number of hooks does not appear to be meaningfully correlated to serious injuries and mortalities; and, (4) takes in the Cape Hatteras Special Research Area (CHSRA) appear to occur in a narrow band along the shelf break on the northern side of the Gulf Stream.

Team members broadly agreed that failure among some members of the fleet to comply with the 20-nautical-mile mainline length requirement is a significant issue that needs to be addressed immediately. Most critically, participants said, the lack of compliance is a significant barrier to meeting MMPA goals.

NMFS. 2012. Pelagic Longline Take Reduction Team, August 21-23, 2012. Key Outcomes Memorandum.

In 2011, observers coverage rose to 10.9% of reported hooks; 6 million hooks were reportedly fished. Thirty-seven marine mammal interactions were observed, including of 23 pilot whales in the MAB, 5 Risso’s dolphins in the NEC, and 1 bottlenose dolphin in the MAB (Garrison et al. 2012). Table 211 shows bycatch by year of pilot whales in the MAB. Serious injury was reported in marine mammals that were hooked in the mouth, that had ingested the hook, or that were released with trailing gear that could result in further entanglement (2). Bycatch rates are calculated by NMFS as catch/1000 hooks and are based upon observer data by fishing area and quarter. The estimated bycatch rate is then multiplied by the total fishing effort (# hooks) as reported in the mandatory fishery logbook reporting program. This calculation provides an estimate of the total number of interactions for each species with the entire fishery. Garrison and Stokes (2012) estimated that 291.7 pilot whales (species unspecified) and 58.3 genetically identified short-finned pilot whales were caught in the pelagic longline fishery (US Atlantic and Gulf of Mexico) in 2011 (Table 233). This estimate is considerably higher than estimates from the previous four years and approached historic highs that were seen in 1995 and 1999. Bycatch estimates for Risso’s dolphins were higher than in 2010 but remained relatively low. Total fishing effort was slightly higher in 2011 than 2010, although it remained low relative to the mid-1990s when historic highs for marine mammal bycatch were observed (Garrison and Stokes 2012).

Table 21 Bycatch of pilot whales in the US Mid Atlantic Bight by year.

Year	Discarded dead	Discard alive	Lost or unknown	Total # animals
2005	0	15	0	15
2006	1	17	0	18
2007	0	7	1	8
2008	0	6	1	7
2009	0	3	0	3
2010	0	4	1	5
2011	2	15	6	23

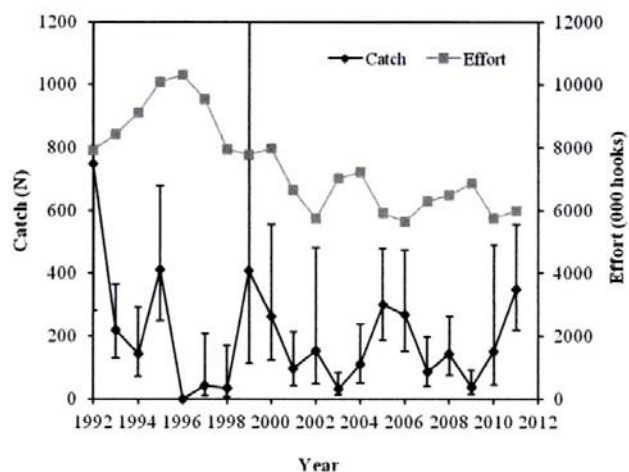
Table 22 Summary of release condition and serious injury types for marine mammals observed in the pelagic longline fishery during 2011. Serious injury determinations were based upon written observer comments. "Entangled" indicates that the animal was released with line remaining attached that is likely to further entangle the animal. Codes indicate table injury categories defined in the Small Cetacean Serious Injury Guidelines (From Garrison and Stokes 2012).

Species	Alive	Dead	Serious Injuries				Serious Injury Total	Total
			Ingested Gear (S2)	Hooked in Head/Mouth (S5a)	Gear Attached Likely to Entangle (S6)	Freed After Entanglement (S7b)		
Atlantic spotted dolphin	1	0	0	0	0	0	0	1
Bottlenose dolphin	2	0	0	0	0	1	1	3
Risso's dolphin	4	0	0	0	3	0	3	7
Pilot whale	3	1	2	9	3	0	14	18
Short-finned pilot whale	1	0	0	2	1	1	4	5
False killer whale	1	0	0	0	0	0	0	1
Pygmy/Dwarf sperm whale	0	0	0	1	0	0	1	1
Unid. dolphin	0	0	0	1	0	0	1	1
<b>Total</b>	<b>12</b>	<b>1</b>	<b>2</b>	<b>13</b>	<b>7</b>	<b>2</b>	<b>24</b>	<b>37</b>

Table 23 Total estimated interactions with marine mammals in the pelagic longline fishery during 2011 (From Garrison and Stokes 2012). 'Pilot whales' include both species; 'short-finned pilot whales' are those specifically identified.

Species	Estimated Alive	CV Alive	Estimated Serious Injury	CV Serious Injury	Estimated Dead	CV Dead	Estimated Total	CV Total	95% Confidence Interval
Atlantic spotted dolphin	0.8	1.000	0	-	0	-	0.8	1.000	0.2 – 4.3
Bottlenose dolphin	28.3	0.709	12.2	1.000	0	-	40.5	0.580	14.1 – 116.3
False killer whale	11.0	1.000	0	-	0	-	11.0	1.000	2.2 – 56.2
Pilot whale	39.5	0.577	233.7	0.299	18.7	1.000	291.7	0.251	179.5 – 474.0
Pygmy/Dwarf sperm whale	0	-	17.0	1.000	0	-	17.0	1.000	3.3 – 86.9
Risso's dolphin	18.0	0.583	13.3	0.631	0	-	31.3	0.429	14.0 – 70.1
Short-finned pilot whale	11.8	1.000	46.5	15.8-137.0	0	-	58.3	0.587	20.0 – 169.3
Unid. dolphin	0	-	1.1	1.000	0	-	1.1	1.000	0.2 – 5.6

#### A. Pilot Whales



#### B. Risso's Dolphins

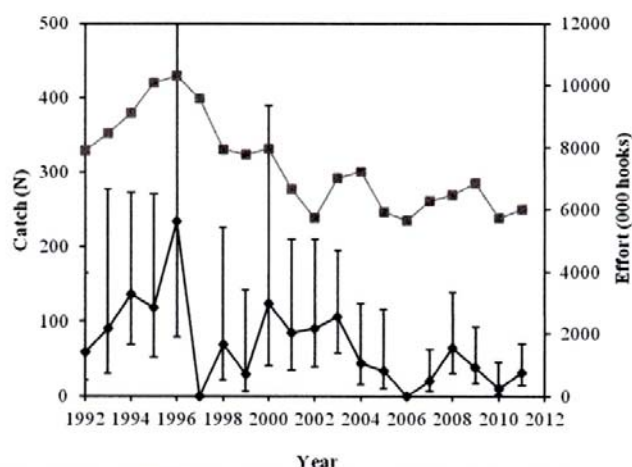


Figure 13. Historic trends in fishery effort and estimated marine mammal takes in the pelagic longline fishery from 1992-2011 for A) Pilot Whales and B) Risso's Dolphins. Errors bars represent 95% confidence intervals. For 2011, the total includes both unidentified pilot whales and short-finned pilot whales.

#### 3.4.3.2 Sea turtles

##### International treaties

The highly migratory behavior of loggerhead and leatherback turtles makes them shared resources among many nations; therefore, conservation efforts for these populations in one country may be jeopardized by activities in another. Both loggerheads and leatherbacks are listed under Appendix 1 of the Convention on International Trade in Endangered Species (CITES); as a result International trade of these species is prohibited. Both species are also listed in Appendices I and II of the Convention on Migratory Species (CMS) and are protected under the following auspices of CMS: the Memorandum of Understanding on the Conservation and Management of Marine Turtles and their Habitats of the Indian Ocean and South-East Asia (IOSEA) and the Memorandum of Understanding Concerning Conservation Measures for Marine Turtles of the Atlantic Coast of Africa. Loggerheads and leatherbacks are also protected under Annex II of the Specially Protected Areas and Wildlife (SPA) Protocol of the Cartagena Convention and the U.S. is a party to the Inter-American

Convention for the Protection and Conservation of Sea Turtles (IAC), which is the only binding international treaty dedicated exclusively to marine turtles<sup>13</sup>.

In 2003 ICCAT adopted a resolution (ICCAT Res 03-11) that encourages ICCAT members and cooperating non-members to collect and provide the SCRS with information on interactions with sea turtles in ICCAT fisheries, including incidental catches and other impacts. The measure also encourages the release of all sea turtles that are incidentally caught alive and safe handling of all turtles released to improve their survival probabilities. The resolution also calls for members to share information, including technical measures, on reducing incidental catches and calls for development of data collection and reporting methods on incidental sea turtle bycatch (NOAA, 2009). An additional resolution adopted in 2005 (ICCAT Res 05-08) encourages ICCAT Members and cooperating non-members to undertake research trials on the use of circle hooks in both commercial and recreational fisheries for HMS. Despite the initiation of these resolutions in 2003, availability of sea turtle interaction data across all ICCAT longline fleets remains limited. As a result, in November 2010 the binding ICCAT Recommendation 10-09 replaced Resolution 03-11 in its entirety and stipulates that no later than 2012:

- *Each CPC shall collect and annually report to ICCAT information on the interactions of its fleet with sea turtles in ICCAT fisheries by gear type, catch rates that take into account gear characteristics, times and locations, target species, and disposition status (i.e.. discarded dead or released alive). Data to be recorded and reported must also include a breakdown of interactions by sea turtle species, and, where possible, include the nature of the hooking or entanglement (Including with Fish Aggregating Devices or FADS), bait type, hook size and type, and the size of the animal. CPCs are strongly encouraged to use observers to collect this information.*

and that CPCs shall require:

- *pelagic longline vessels flagged to that CPC operating in the Convention area carry on board safe-handling, disentanglement and release equipment capable of releasing sea turtles in a manner that maximizes the probability of their survival*
- *fishermen on pelagic longline vessels flagged to that CPC operating under their flag use the equipment specified above to maximize the probability of sea turtle survival and are trained in safe-handling and release techniques.*

In addition this recommendation set up timelines for an assessment of the impact of the incidental catch of sea turtles resulting from ICCAT fisheries to be carried out as soon as possible and no later than 2013.

### **National legislation**

In the U.S., NOAA's National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) have joint jurisdiction for protection of marine turtles; NMFS covers protection in the marine environment and USFWS covers protection of nesting beaches. All six species of marine turtles which occur in US waters are listed as either endangered or threatened under the ESA<sup>14</sup>.

Species listing under the ESA is based on the status of a species throughout its range or in a specific portion of its range; threatened species are those likely to become endangered in the foreseeable future if no action is taken to stop the decline of the species; endangered species are those in danger of becoming extinct throughout all or a significant portion of their range<sup>15</sup>. In addition to species

<sup>13</sup> <http://www.nmfs.noaa.gov/pr/species/turtles/loggerhead.htm>;

<http://www.nmfs.noaa.gov/pr/species/turtles/leatherback.htm>

<sup>14</sup> <http://www.nmfs.noaa.gov/pr/species/turtles/>

<sup>15</sup> 16 U.S.C. §1532(20)

listing under the ESA, NMFS or USFWS must also designate critical habitat for listed species, which includes areas occupied by the species that are essential to its conservation.

Under the ESA, USFWS and NMFS are required to conduct a review of listed species under their jurisdiction at least once every 5 years. A 5-year review is an assessment of a listed species to determine whether its status has changed since the time of its listing such that it should be delisted or classified differently than its current status. The purpose of a 5-year review is to ensure that a listed species has the appropriate level of protection under the ESA.

In addition to this, Section 7 of the ESA requires that any federal agency proposing to do anything, e.g., issue a permit or take a direct action that might affect an ESA-listed species must first consult with NOAA about such effects. The process involves submission of a Biological Assessment (BA) by the federal agency to NOAA, outlining what the expected consequences of the proposed activity will be. In consultation with the other agency, NOAA formally responds to the BA with a biological opinion (BiOp), a scientific judgment about a proposed action, the aim of which is to ensure that the listed species is not put in jeopardy (at risk of extinction) by the action. This document can include conservation recommendations to minimize or avoid possible adverse effects on listed species or their critical habitat; it can also impose reasonable and prudent measures (RPMs) necessary to minimize any harmful impacts, and can require monitoring and reporting to ensure adequate species-protection compliance. The objective of a BiOp therefore, is to prevent unacceptable harm to a listed species or its habitat.

The biological opinion must identify the Reasonable and Prudent Alternatives (RPAs) to the action, if any, that would avoid jeopardizing any listed species and avoid destruction or adverse modification of designated critical habitat. The opinion also includes an Incidental Take Statement (ITS) which specifies the amount or extent of incidental taking that may result from the proposed action. A BiOp is not an Endangered Species Act recovery plan, but can be a component of such a plan, and is one part of the ESA process. If ITS limits are exceeded, a biological opinion is triggered to re-assess the measures required to prevent jeopardy of the species in question.

Recovery plans are also required under the ESA (Section 4(f)) to help identify and guide the protection, conservation, and recovery of each listed sea turtle species. The objective of these recovery plans is to provide a blueprint for conservation of the species and measurable criteria to gauge progress toward recovery.

The recent history of Biological Opinions (BiOp) in relation the HMS Atlantic Pelagic Longline fishery and interactions sea turtles taken from NMFS (2004a) is summarised below:

In 2000 an initial BiOp considered time area closures to protect bycatch (including billfish and undersized swordfish), and this concluded that even with these closures the HMS pelagic longline fishery was likely to jeopardize the continued existence of loggerhead and leatherback sea turtles. The HMS Pelagic longline fishery was not considered to jeopardise other species of sea turtles. Two RPAs were proposed to address threats of the longline fishery to loggerhead and leatherback turtles and these were subsequently implemented through emergency regulations in October 2000:

1. Closure of the Northeast Distant (NED) statistical reporting area (where interactions with sea turtles occur more frequently at certain times of the year) from October 2000 through to April 2001
2. Requirement for vessels fishing outside of the NED to carry dip nets and line-cutters to minimise entanglement and post-release mortality of sea turtle bycatch.

One of the proposed closures which had triggered the initial BiOp on sea turtles was also implemented in 2000; this was the year round closure of the area south of 31°N latitude, the 'Florida East Coast' (FEC).



After a public consultation period, another biological opinion was released in June 2001 and concluded that the HMS pelagic longline fishery was still likely to jeopardise the continued existence of loggerhead and leatherback sea turtles. The 2001 BiOp used the NMFS SEFSC (2001) population models to determine how large a reduction in pelagic mortality was necessary to move the modelled loggerhead population from declining to stable or from stable to increasing. It concluded that a 55% reduction in loggerheads mortality resulting from longlines in the Atlantic was necessary, and this was based on achieving a positive change in overall pelagic juvenile survival by 10%. The associated BiOp included ITS for loggerhead and leatherback turtles and also specified the following RPAs:

- Closure of NED area to HMS pelagic longline fishing effective July 15<sup>th</sup> 2001
- Requirement that gangions be placed no closer than twice the average gangion length from the suspending floatlines, effective August 1<sup>st</sup> 2001
- Requirement that gangion lengths be 110 % of floatline length in sets of 100 m or less in depth, effective August 2001
- Requirement for use of corrodible hooks effective August 2001
- Requirement for additional gear modifications or fishing practices prior to reopening the NED based on a new cooperative research programme.
- A term and a condition as part of ITS requiring action by NOAA to reduce post-release mortality of turtles caught on longlines no later than September 15<sup>th</sup> 2001; this required all vessels to post guidelines for the safe handling and release of sea turtles inside the wheelhouse.

On July 9<sup>th</sup> 2002, a Final rule (67 FR 45393) was published implementing the above RPAs, except the gangion spacing requirement, as this measure was thought to increase bycatch of leatherback turtles. These measures were expected to achieve 55% reduction in loggerhead bycatch compared to the status quo across the US Atlantic pelagic longline fleet; in addition to this reduction in overall interactions, a further reduction in the post-hooking mortality for loggerheads was also expected, specifically through use of circle hooks.

The cooperative research programme was implemented by SEFSC during 2001-2003, testing gear technologies and fishing strategies aimed at reducing the likelihood of interactions between fishing gear and sea turtles, and dramatically reducing the immediate and delayed mortality rates of turtles captured. Experiments primarily tested circle hooks against J hooks in combination with different (mackerel or squid) bait types (Watson et al, 2004; 2005). During the course of the experiments, loggerhead turtles (mostly young, oceanic pelagic animals) were caught in significantly lower numbers on circle hooks (18/0 10° offset) combined with either squid or mackerel bait than on J-hooks with these bait types; and when caught on J hooks, loggerheads were more likely to swallow the hook, while those caught on circle hooks were more frequently hooked in the mouth. Results were less clear for leatherbacks which were less frequently caught on mackerel bait combined with both hooks types. The study concluded that use of 18/0 circle hooks and mackerel bait can significantly reduce bycatch of loggerhead and leatherback sea turtles.

The NED remained closed from 2001 through 2004. At this time another BiOp consultation was produced for continued authorization of the Atlantic pelagic longline fishery as managed under the Fishery Management Plan for Atlantic Tunas, Swordfish, and Sharks (HMS FMP) because the ITS had been exceeded in 2001 and 2002 for loggerheads and in 2002 for leatherbacks. SERO Protected Resources Division (SERO-PRD) produced the BiOp, which covered the whole US Atlantic pelagic longline fishery and a number of turtle species found in the region. It concluded that the PLL fishery was not likely to jeopardise the continued existence of loggerheads, but was still likely to jeopardise the continued existence for leatherbacks.

As a result additional RPAs were added to those included in the original consultation and included:

- Reduce post-release mortality of leatherbacks

- Improve monitoring of the effects of the fishery
- Confirm the effectiveness of the proposed action
- Take management action to avoid long-term elevations in leatherback takes or mortalities

Results of the 2001-2003 NED experiments were incorporated into the RPAs resulting from the SERO BiOp and some of these measures were subsequently enforced through a Federal Regulation (69 FR 40734) in 2004 on the entire US Atlantic Pelagic longline fishery.

The NED area was re-opened with a requirement for vessels fishing there to use 18/0 10<sup>9</sup> offset circle hooks and whole mackerel and squid baits; vessels fishing outside the area were required to use 18/0 or 16/0 non-offset circle hooks but other whole fish baits were allowed.

Expected reductions (%) in sea turtle by-catch and associated mortality as a result of implementing these technical measures were estimated from results of the 2001-03 experiments in the NED and used to generate incidental take limits for loggerheads and leatherbacks for the entire US pelagic longline fishery for subsequent three year periods (i.e. 2004-06; 2007-09) (NOAA, 2004). A greater reduction in bycatch is prescribed for the second three year period resulting in lower ITS limits for these three years. The proposed measures were expected to reduce the U.S contribution to basin-wide longline mortality to 0.1%; although mortality at any level has a negative effect on the overlying population, it was concluded that the mortality of loggerheads associated with the fishery with the new measures in place, was not likely to create a detectable adverse effect.

In addition to management under the ESA, in 2003, NMFS developed the 'Strategy for Sea Turtle Conservation and Recovery in Relation to Atlantic and Gulf of Mexico Fisheries' to evaluate and address domestic sea turtle bycatch comprehensively across jurisdictional (i.e., state and Federal) and fishing sector (i.e., commercial and recreational) boundaries on a per-gear basis. As a result of this strategy, NMFS continues to be involved in cooperative gear research projects designed to reduce sea turtle bycatch, currently in the Gulf of Mexico and Atlantic pelagic longline fisheries<sup>16</sup>.

### Population status

At the time of the 2004 BiOp, the U.S. longline fishery was not considered to affect any loggerhead stocks disproportionately, *i.e.*, pelagic longline interactions occurred in proportion to the stock sizes of relevant nesting aggregations (NMFS 2004a). Additionally, at the time of the BiOp in 2004, none of the nesting subpopulations of loggerheads in the northwest Atlantic were declining.

However, in 2009, a status review of loggerhead turtle populations was carried out under the ESA by the Biological Review Team (Conant et al. 2009) which identified 9 distinct and significant global population segments (four in the Atlantic/Mediterranean) markedly separated from each other as a consequence of ecological, behavioural, and oceanographic factors, and based on genetic evidence. The 2009 Status review determined that the North west Atlantic DPS of loggerheads has a high likelihood of quasi-extinction (based on nesting mature females) and is faced with a potential decline in the future due to the existing additional mortalities, relative to the assumed natural survival rates and fertility.

Within the North-West Atlantic DPS, 5 recovery units (subpopulations) have been identified (NMFS & US FWS 2008) based on genetic differences and a combination of geographic distribution of nesting densities and geographic separation; two of these are relevant to the distribution of the fishery under assessment: the Northern Recovery Unit (Florida/Georgia border through southern Virginia), and primarily the Peninsular Florida Recovery Unit (Florida/Georgia border through Pinellas County, Florida). In the Northwest Atlantic, based on satellite telemetry studies and flipper tag returns, non-nesting adult females from the Northern Recovery Unit reside primarily off the east coast of the U.S. Adult females of the Peninsular Florida Recovery Unit are distributed throughout

<sup>16</sup> <http://www.nmfs.noaa.gov/pr/species/turtles/loggerhead.htm>

eastern Florida, the Bahamas, Greater Antilles, Cuba, the Yucatán Peninsula, and the Gulf of Mexico, as well as along the Atlantic seaboard of the U.S. (Conant et al. 2009). Both of these recovery units experienced declines in nesting through the mid 2000s, (Conant et al. 2009). However, the Florida Fish and Wildlife Conservation Commission (FWC 2012) reports substantial increases in loggerhead nesting in Florida from 2007 to 2012, such that no trend in nest counts is evident since the beginning of nesting counts in 1989. Florida accounts for more than 90 percent of U.S. loggerhead nesting.

Therefore justifications outlined in the 2004 BiOp for the U.S Atlantic pelagic longline fishery not being 'likely to jeopardise the continued existence of loggerhead sea turtles' were based on assessments which expected loggerhead populations to be at increasing levels.

As a result of declining trends through the mid 2000s for the nine Atlantic loggerhead DPSs, a proposal was made to list two as threatened and to uplist seven to endangered status (FR Vol. 75, No. 50:12598-12656). The consultation on this proposal was initiated in March 2010 for a 12 month period. However, determination was postponed in March 2011 for a further 6 months due to substantial disagreement amongst consulted stakeholders on the interpretation of the existing data on status and trends and its relevance to the assessment of risk of extinction to the Northwest Atlantic Ocean DPS of the loggerhead turtle (FR Vol. 76, No. 55:15932-15933). Additionally, considerable disagreement existed regarding the magnitude and immediacy of the fisheries bycatch threat and measures to reduce this threat to the Northwest Atlantic Ocean DPS of the loggerhead turtle. During the 6 month extension to the determination period, NMFS solicited new information or analyses to help clarify these issues. In September 2011, NMFS published a final rule, effective October 2011, that determines that four DPSs will be listed as threatened and five as endangered under the ESA (FR Vol. 76, No. 184: 58868). The Northwest Atlantic Ocean DPS is listed as threatened. In the final rule, NMFS indicates it will designate critical habitat for the two loggerhead sea turtle DPSs occurring within the US in a future rulemaking.

The most recent status review for leatherback turtles (NOAA 2007) concluded that leatherback turtles should remain classified as endangered throughout their species range, but indicated that Atlantic populations were relatively stable with an estimated population of 34,000-94,000 adult leatherbacks. An increasing or stable trend is currently seen across five (Florida, Northern Caribbean, Southern Caribbean, South Africa and Brazil) of the seven population groups; while in the Western Caribbean and West Africa population status is unknown. Despite the relative stability in Atlantic leatherback populations, the fishery impacts adults and sub-adults to a greater extent than juveniles in the populations, and therefore has a potentially greater impact on the breeding population (NMFS 2004a).

In the 2004 BiOp, it was therefore concluded that the US HMS Atlantic Pelagic longline fishery was likely to jeopardize the continued existence of leatherback sea turtles. Assessment of the effectiveness of measures brought in to address threats to leatherback turtles by NMFS- SEFSC concluded that consistent declines in bycatch rates for leatherback turtles suggest that the management actions put in place in 2004 have been moderately successful but that longer term datasets are required to confirm this.

Kemp's ridley sea turtles are also caught in the pelagic longline fishery, though only one was caught from 2005-2011, according to the observer program data. Kemp's ridley sea turtles are listed as endangered under the ESA. Kemp's ridley sea turtles once numbered 40,000 nesting females in 1947. They dropped to between 200 and 250 nesting females annually by the mid-1980s. A Recovery Plan was implemented in 1992, and conservation efforts including decreasing egg collection, reducing killing of nesting females, and decreasing bycatch in Mexican and US shrimp fleets led to a population rebound to about 4,000 nesting females in the 1990s. This population is still only half of what is required to meet the downlisting criterion of at least 10,000 nesting females (NMFS and USFWS 2007). In February 2019, NOAA Fisheries and US Fish and Wildlife Service were jointing petitioned to designate critical habitat for nesting beaches of Kemp's ridley sea turtles along

the Texas coast and in the Gulf of Mexico and Atlantic Ocean. The organizations are currently reviewing the petition (WildEarth Guardians 2010).

### *Catches of sea turtles in the Fishery Under Assessment*

Leatherback, loggerhead, and Kemp's ridley sea turtles were all observed to interact with the US Atlantic pelagic longline fishery. Only one Kemp's ridley sea turtle was caught from 2005-2011 in the observer program data, while a total of 140 leatherback and 301 loggerhead sea turtles were observed. Three leatherback and one loggerhead sea turtles were known to be discarded dead, though the condition of additional turtles is unknown (Table 24). Earlier studies indicate that in 2009, approximately 3 percent of all turtles observed interacting with US Atlantic pelagic longline gear died (Fairfield-Walsh and Garrison 2006, 2007; Fairfield and Garrison 2008; Garrison et al. 2009; Garrison and Stokes 2010).

Table 24 Sea turtle interactions with pelagic longline gear in the US Atlantic observed by the NMFS observer program data from 2005-2011. The stock status is listed for each species, as it is listed on the Endangered Species Act. The various fishing areas correspond to the NMFS Statistical Areas: MAB = Mid Atlantic Bight, NCA = North Central Atlantic, SAB = South Atlantic Bight, NEC = Northeast Coastal, NED = Northeast Distant, FEC = Florida East Coast.

Species	StockStatus	Fishing Area	Discarded dead	Discard alive	Lost or unknown	Total # animals
Turtle, unidentified species	N/A	NCA/SAR/NEC/NED	0	0	1	1
Leatherback sea turtle	Endangered	FEC	0	13	0	13
		MAB	0	25	4	29
		NCA/SAR/NEC/NED	3	73	12	88
		SAB	0	8	2	10
		FEC	0	26	2	28
Loggerhead sea turtle	Threatened	MAB	0	37	3	40
		NCA/SAR/NEC/NED	0	203	13	216
		SAB	1	16	0	17
		FEC	0	0	1	1

Bycatch rates are calculated by NMFS as catch/1000 hooks and are based upon observer data by fishing area and quarter. The estimated bycatch rate is then multiplied by the total fishing effort (number of 1000-hooks units) as reported in the mandatory fishery logbook reporting program. This calculation provides an estimate of the total number of interactions for each species with the entire fishery (Garrison and Stokes 2012a). These calculations have been done for loggerhead and leatherback sea turtles but not for Kemp's ridley sea turtles due to low observed bycatch of this species. Current models used to estimate sea turtle bycatch have wide confidence intervals and the accuracy is unknown, making it difficult to determine bycatch in a single year or trends over time; however, Barlow and Berkson (2012) found the current model used by the Southeast Fishery Science Center to model sea turtle bycatch in the US Atlantic pelagic longline fishery to be the least biased and most realistic when compared with other modelling options.

In 2011, 10.9% of reported hooks were observed (10.1% of reported sets); the total reported effort in the pelagic longline fishery in the US Atlantic and Gulf of Mexico was 6 million hooks (Garrison and Stokes 2012b). Twenty-four interactions were observed with leatherback sea turtles and forty-seven with loggerhead sea turtles. The majority of the animals were released alive though injured. Leatherbacks were primarily hooked externally whereas loggerheads were hooked in the mouth or had swallowed the hooks (**Error! Reference source not found.**5) (Garrison and Stokes 2012b). Gear was removed from 44 of the 72 sea turtles before release. Three leatherback and four loggerhead sea turtles were released either entangled or with hook and line remaining that was greater than one half of the carapace length. The total estimated interactions in the fishery were 238.5 interactions for leatherbacks in the regular fishery (1 in an experimental fishery) and 437.6 interactions for loggerheads. The highest number of interactions for leatherbacks occurred in the MAB whereas for loggerheads were in the NED, NEC, and MAB areas.

Leatherback sea turtle interactions with the pelagic longline fishery reached a historical high in 2004, and had increased sharply prior to that since 1998 (Figure 14). In 2005, the number of takes decreased after regulations were implemented in August 2004. In 2010, the number of interactions continued a downward trend, estimated since 2007. Interactions in 2011 were slightly higher than in 2010, although total effort in 2010 was low due to closures in the Gulf of Mexico in the 3<sup>rd</sup> and 4<sup>th</sup> quarters due to the Deep Horizon oil spill (Garrison and Stokes 2012a). For loggerheads, a historical high in takes occurred in the mid-1990s (Figure 14). Since 2000, the number of takes has been below this high. A decrease occurred in 2005 due to the gear regulations, although a slight rebound was observed after 2005 which remained below the pre-regulation number of takes. Takes in 2011 were lower than in 2006 and 2007, but higher than in 2010. A cyclic pattern has been observed in loggerhead bycatch, occurring in 4-5 year intervals since 1996.

Interactions observed across the US Atlantic pelagic longline fleet in 2011 amount to total estimated interactions which are below the annual IT limits of 635 for loggerheads and 588 for leatherbacks as set out in 2004 BiOp, though for loggerhead sea turtles the total 95% confidence interval estimates the higher range of possible takes to be just below the IT limit (Garrison and Stokes 2012b). The coefficients of variation (CVs) on which these estimates are based are also below the precision target of 30% required for monitoring ETP species by NOAA (NMFS 2004b, Garrison and Stokes 2010, 2012b).

Estimates of mortality are also made by NMFS in the BiOp – but do not form part of the ITS. These are calculated by multiplying estimated mortality rates by estimated total takes. Mortality rate estimates used include immediate mortality and post-release mortality based on non-NED hook removal proportions and NED circle hook interaction rates. For years subsequent to 2004, these were estimated to be 198 leatherback turtles per year and 143 loggerhead turtles per year (NMFS 2004a).

Table 25 Total estimated interactions and experimental takes for A) Leatherback and B) Loggerhead turtles and C) Olive ridley turtles in the pelagic longline fishery during 2011 by fishing area, including estimates for strata that were not observed during 2011 (Garrison and Stokes, 2012b). The observed olive ridley interaction occurred outside the area for the Unit of Certification. No Kemp's ridley interactions were observed in 2011.

**A. Leatherbacks**

Area	Total	Total CV	Total 95% Confidence Interval	Experimental Takes
CAR	2.9	0.753	0.8 - 10.9	-
FEC	16.5	1.000	3.2 - 84.5	0
GOM	32.6	0.522	12.4 - 85.2	-
MAB	139.7	0.308	77.4 - 252.2	0
NCA	0.0	-	-	-
NEC	26.0	0.510	10.1 - 66.6	-
NED	7.6	0.270	4.5 - 12.9	-
SAB	12.1	0.645	3.8 - 38.4	1
SAR	0	-	-	-
TUN	1.1	1.000	0.2 - 5.5	-
<b>Total</b>	<b>238.5</b>	<b>0.216</b>	<b>156.8 – 362.8</b>	<b>1</b>

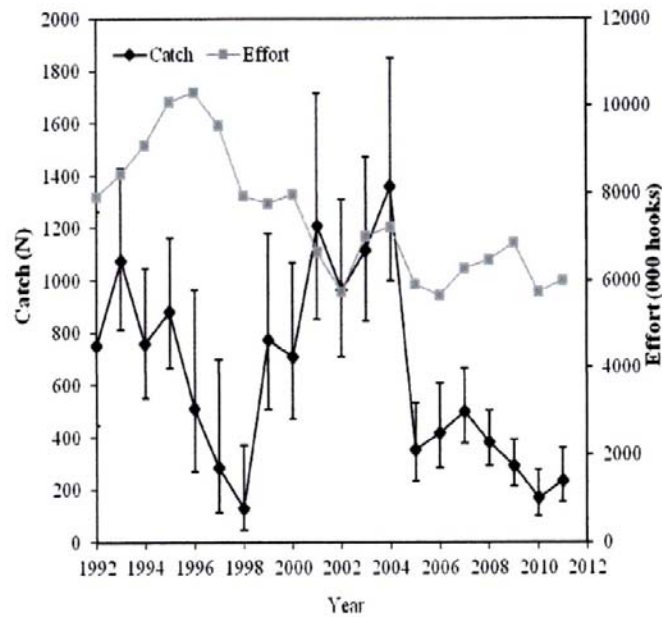
**B. Loggerheads**

Area	Total	Total CV	Total 95% Confidence Interval	Experimental Takes
CAR	3.6	0.736	1 - 13.2	-
FEC	92.0	0.471	38.3 - 221.1	0
GOM	0.0	-	-	-
MAB	81.0	0.449	35 - 187.5	0
NCA	0.0	-	-	-
NEC	103.3	0.301	58 - 184.2	-
NED	104.9	0.385	50.6 - 217.4	-
SAB	9.0	1.000	1.8 - 46.1	0
SAR	43.8	0.351	22.5 - 85.5	-
TUN	0.0	-	-	-
<b>Total</b>	<b>437.6</b>	<b>0.179</b>	<b>309.1 – 619.5</b>	<b>0</b>

**C. Olive ridley**

Area	Total	Total CV	Total 95% Confidence Interval	Experimental Takes
CAR	0.9	1.000	0.2 - 4.5	-
TUN	3.1	1.000	0.6 - 15.7	-
<b>Total</b>	<b>4.0</b>	<b>0.807</b>	<b>1.0 – 15.9</b>	<b>0</b>

### A. Leatherback Turtles



### B. Loggerhead Turtles

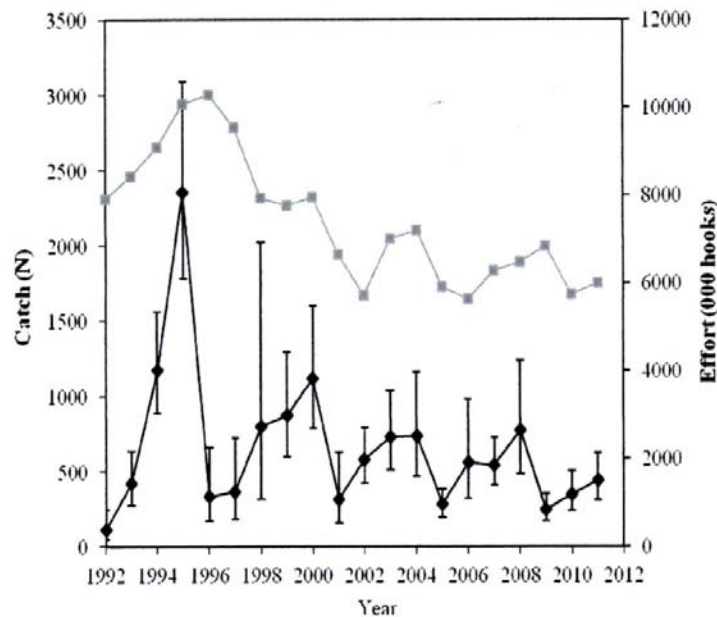


Figure 14 Historical trends in fishery effort and estimated marine turtle takes in the pelagic longline fishery from 1992-2011 for A) leatherback turtles and B) loggerhead turtles. Error bars represent 95% confidence intervals. (From Garrison and Stokes 2012b).



### 3.4.3.3 Seabirds

#### National Legislation

Two US statutes require the minimization of seabird bycatch. Firstly, species listed as threatened or endangered under the ESA are protected in US waters. Only 2 sea bird species on the US east coast are listed under the ESA, including Bermuda petrel (*Pterodroma cahow*) and the roseate tern (*Sterna dougallii*), neither of which are caught in this fishery. Secondly, the Migratory Bird Treaty Act (MBTA) makes it a felony to knowingly “pursue, hunt, take, capture, [or] kill” any migratory bird, “by any means or in any manner.”<sup>17</sup> The spatial reach of the MBTA is unclear. Prior to 2001, it applied to the 12 nautical mile US territorial sea but has since applied only to state waters (Moore et al. 2009). Responsibilities for the USFWS under the MBTA are set forth in Executive Order 13186, which instructs agencies whose actions negatively impact migratory birds to develop and implement a Memorandum of Understanding (MoU) within two years with the USFWS to promote conservation of migratory birds (66 FR 3853).<sup>18</sup> An MOU between NMFS and the USFWS was published in June 2012 that calls for identifying best practices for avoiding or minimizing take of migratory birds and reducing seabird bycatch (NOAA 2012). No actions have yet been taken to reduce sea bird bycatch in the US Atlantic pelagic longline fishery.

The 2006 reauthorization of the Magnuson-Stevens Fishery Management and Conservation Act (MSA) established a bycatch reduction program that acknowledges the importance of seabird bycatch and established a legislative framework to address it. The program promotes the development of bycatch mitigation technologies and authorizes incentives and cooperative research programs on bycatch reduction between federal agencies and industries. The reauthorization, however, failed to include a proposed amendment to the definition of ‘bycatch’ to include seabirds, thus failing to provide a mandate to reduce seabird bycatch in federal fisheries (Moore et al. 2009).

Management of seabird bycatch in longline fisheries is also guided by the US National Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries (NPOA-S) (2001) to fulfil a national responsibility of addressing seabird bycatch in longline fisheries, as requested in the International Plan of Action for Reducing the Incidental Catch of Seabirds in Longline Fisheries (IPOA-S) (NOAA 2001). The IPOA-S is voluntary and calls for countries to “(1) assess the degree of seabird bycatch in their longline fisheries; (2) develop individual national plans of action to reduce seabird bycatch in longline fisheries that have a seabird bycatch problem; and (3) develop a course of future research and action to reduce seabird bycatch (NOAA 2001).” The NPOA-S calls for detailed assessments of its longline fisheries for seabird bycatch within two years. If a problem is found to exist in a particular fishery, measures to reduce bycatch should be implemented within two years. The NPOA-S also calls for NMFS to prepare an annual report on the status of seabird mortality for each longline fishery, including assessment information, mitigation measures, and research efforts. The NPOA-S does not prescribe specific measures to be taken for each longline fishery but instead provides a framework that allows appropriate actions to be taken for each longline fishery. To date, no measures have been adopted to reduce seabird bycatch in US Atlantic longline fisheries. NMFS has not identified a need to implement gear modifications to reduce seabird takes by Atlantic pelagic longline fisheries. In general, takes of seabirds have been minimal in the fishery, most likely due to the setting of longlines at night and/or fishing in areas where birds are largely absent. As a result, seabirds were not scored in this assessment. However, it is clear from federal measures in other regions that the management system is prepared to take necessary actions to protect and recover seabird populations. For example, efforts to protect seabirds in the US North Pacific have led to substantial reductions in seabird takes, and have prevented the limited allowable takes of short

<sup>17</sup> <http://www.fws.gov/laws/lawsdigest/migtrea.html>

<sup>18</sup> [http://www.fsa.usda.gov/Internet/FSA\\_File/eo13186.pdf](http://www.fsa.usda.gov/Internet/FSA_File/eo13186.pdf)



tailed albatross from affecting the longline fisheries for Alaska groundfish and Pacific halibut (NPFMC 2012).

### Population status

Of the species caught in the pelagic longline fishery, greater shearwater, herring gull, black-backed gull, and Northern gannet are listed on the MBTA (76 FR 23428).<sup>19</sup> None are listed under the ESA.

In the mid-Atlantic and New England regions, the Mid-Atlantic/New England/Maritime Regional Working Group (MANEM), a regional collaboration between organizations and individuals to facilitate waterbird conservation, identified negative fisheries interactions as a serious threat to populations of several bird species, including several caught according to the pelagic longline fishery observer data (greater shearwater *Puffinus gravis*, northern gannet *Morus bassanus*, and herring gull *Larus argentatus*) (Le Boeuf 2007). The greater shearwater and northern gannet have also been identified as species at risk due to fisheries bycatch (Le Boeuf 2007). In the Southeast region, the Southeast US Waterbird Conservation Plan, an initiative focused on conserving waterbird populations and habitat in thirteen states—Texas, Oklahoma, Arkansas, Kentucky, Tennessee, Louisiana, Mississippi, Alabama, Florida, Georgia, South Carolina, North Carolina, and Virginia—identified populations of waterbirds that are negatively impacted by interactions with fisheries, including the northern gannet (Le Boeuf 2007).

### Catches of seabirds in the Fishery Under Certification

Species caught in the US pelagic longline fishery, according to POP data from 2005-2011, are provided in Table 266. In the Atlantic, seabird bycatch in US fisheries occurs mostly in gillnet fisheries; it is thought to have little impact on seabird populations though cumulative bycatch estimates through the geographic ranges of impacted species are lacking (Soczek 2006; Hata 2006). An estimated 143 seabirds, mostly gulls and shearwaters, are killed annually in the Atlantic pelagic longline fishery (Hata 2006).

Table 26 Seabird interactions with the US Atlantic pelagic longline fishery were reported in NMFS observer program data from 2005-2011. The various fishing areas correspond to the NMFS Statistical Areas: MAB = Mid Atlantic Bight, NCA = North Central Atlantic, SAB = South Atlantic Bight, NEC = Northeast Coastal, NED = Northeast Distant, FEC = Florida East Coast.

Species	Fishing Area	Discarded dead	Discard alive	Lost or unknown	Total # animals
Seabird, unidentified species	MAB	1	0	0	1
	NCA/SAR/NEC/NED	1	0	0	1
Greater shearwater	MAB	5	0	0	5
	NCA/SAR/NEC/NED	1	0	0	1
Herring gull	MAB	4	0	0	4
	SAB	1	0	0	1
Gull, unidentified species	MAB	1	0	0	1
Black-backed gull	MAB	6	0	0	6
Northern gannet	MAB	1	2	0	3
	NCA/SAR/NEC/NED	1	0	0	1
Cory's shearwater	SAB	1	0	0	1
Shearwater, unidentified species	NCA/SAR/NEC/NED	0	1	0	1

Observer data from 1992-2003 also indicated that seabird bycatch was relatively low, with 79 seabirds observed killed in the Atlantic pelagic longline fishery during this time period (NOAA 2004). Observed mortality from bycatch ranged from 1 to 18 birds each year, while the number of birds released alive each year ranged from 0 to 15. Half of the birds were not identified by species,

<sup>19</sup>

although gulls represented the largest group, followed by greater shearwaters and northern gannets. Greater shearwaters experienced the highest level of mortality at 100%, and northern gannets the lowest (12%). There was no apparent pattern in year to year bycatch rates. From 1995-2002, the estimated number of seabirds killed ranged from 0 to 468 (bycatch rate of 0-0.0486 birds/1,000 hooks), and the estimated number of live discards ranged from 0 to 292 birds (0-0.0303 birds/1,000 hooks) (Table 277). A peak in takes was observed in 1997. Based on these observations and estimates, NOAA (2004) concluded that bycatch of seabirds in the Atlantic HMS pelagic fishery is relatively minimal and does not appear to be a significant problem. As a result, no mitigation measures have been proposed or implemented. NMFS intention is to continue to collect data on seabird bycatch through observer programs and logbook programs, to increase species identification of observed interactions, and to reassess as new information becomes available (NOAA 2004).

Table 27. Expanded estimates of seabird bycatch and bycatch rates (discarded dead and discarded alive) in the U.S. Atlantic pelagic longline fishery, 1995-2002. From NOAA 2004.

	1995		1996		1997		1998		1999		2000		2001		2002	
Species	D	A	D	A	D	A	D	A	D	A	D	A	D	A	D	A
Unid. seabirds	134	0	0	0	468	292	155	0	14	0	0	0	0	0	3	3
Gulls	0	15	0	0	0	0	0	0	0	0	0	18	0	0	14	83
Shearwaters	0	0	0	0	0	0	0	0	0	0	0	0	210	0	6	0
Northern gannet	0	30	0	0	0	0	0	0	0	0	11	0	0	0	0	1
Storm petrel	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
All seabirds	170	44	0	0	468	292	155	0	14	0	11	18	210	0	23	87
Total hooks set	10,182,297		10,310,708		9,637,807		8,019,183		7,901,789		7,975,529		7,563,951		7,150,231	
Bycatch rate	0.0167	0.0044	0	0	0.0486	0.0303	0.0194	0	0.0017	0	0.0014	0.0023	0.0278	0	0.0032	0.0121

D = released dead; A = released alive  
Bycatch rate = number of seabirds per 1,000 hooks

### 3.4.4 Habitat

Both pelagic longlines and handline buoy gear target swordfish in the surface or mid-depth pelagic waters. Buoy gear consists of one or more floatation devices supporting a single vertical mainline to which no more than two hooks or gangions are attached. This gear is usually free floating and is not anchored but may contact the bottom briefly during setting. Longlines are suspended by floats in the water column and are not fixed to or in contact with the ocean bottom. As a result of the pelagic and drifting nature of the gear, impacts on the benthic environment are not expected to result. Gear loss and ghost fishing from pelagic longlines and handline buoy gear is very rare; any lost gear is likely to be quickly retrieved due to the costs associated with its replacement.

The reauthorization of the MSFCMA in 1996 defined Essential Fish Habitat (EFH) as “*all waters and substrates necessary to fish for spawning, breeding, feeding or growth to maturity.*” Under this Act, Regional Fishery Management Councils are directed to describe and identify EFH for each federally managed species, attempt to minimize the extent of adverse effects on habitat caused by fishing and non-fishing activities, and identify actions to encourage conservation and enhancement of those habitats (NMFS, 2006). FMPs and associated amendments must provide written description of EFH and must also provide maps of the geographic locations or boundaries within which EFH for each species and life stage is found (NMFS, 2006). The Magnuson-Stevens Act also requires NMFS to periodically review, revise and amend EFH provisions based on available information; this review period is usually once every five years.

EFH was first identified and described for Atlantic tunas, swordfish and sharks in the 1999 HMS FMP. Table 288 lists the details of EFH designation and evaluation under the HMS FMP.

Table 28 Management history of designation of EFH under the HMS FMP (Source: NMFS, 2010a)

FMP or Amendment	Species for which EFH was identified
1999 FMP for Atlantic Tunas, Swordfish, and Sharks	EFH first identified and described for Atlantic tunas, swordfish and sharks
1999 Amendment 1 to the Billfish FMP	EFH first identified and described for Atlantic billfish
2003 Amendment 1 to the FMP for Atlantic Tunas, Swordfish and Sharks	EFH updated for five shark species (blacktip, sandbar, finetooth, dusky, and nurse sharks)
2006 Consolidated Atlantic HMS FMP	Comprehensive review of EFH for all HMS. EFH for all Atlantic HMS consolidated into one FMP. No changes to EFH descriptions or boundaries
2009 Amendment 1 to the Consolidated Atlantic HMS FMP	EFH updated for all federally managed Atlantic HMS. HAPC for bluefin tuna spawning area designated in the Gulf of Mexico
2010 Amendment 3 to the Consolidated Atlantic HMS FMP	EFH first defined for smooth dogfish
2010 White Marlin/ Roundscale Spearfish Interpretive Rule and Final Action	EFH first defined for roundscale spearfish; same as white marlin EFH designation in Amendment 1

EFH for the primary and secondary target species span the US Atlantic coast.<sup>20</sup> EFH has also been designated under the SAFMC FMP for dolphin and wahoo fishery in the Atlantic under an extensive habitat plan.

The process of defining and monitoring EFH also requires an assessment of likely impacts of gears associated with each gear type covered by the FMP. In the 2006 Consolidated HMS FMP review of EFH, NMFS concluded that pelagic gears targeting HMS species have minimal or no impact on EFH for HMS species or to EFH for other species (NMFS, 2006).

Habitat areas of particular concern (HAPC) that have been designated under the HMS FMP include areas for sandbar sharks in the Mid-Atlantic Bight region and for spawning bluefin tuna in the Gulf of Mexico. A number of areas in New England have been closed or identified as HAPC areas for non-HMS species and due to vulnerable benthic habitat, such as canyon areas, seamounts, and coral reefs<sup>21</sup>; however, due to the pelagic nature of the swordfish fishery, it is unlikely to have any impact on these habitats.

The Atlantic States Marine Fisheries Commission (ASMFC), which coordinates marine fisheries management of 22 species or species groups of commercially and recreationally important fish found along the Atlantic coast of the United States, published a Five-Year Strategic Plan for 2009-2013. The Plan will guide the ASMFC Habitat Committee's activities from 2009 through 2013, and outlines goals and strategies for current and future activities of the ASMFC Habitat Program (ASMFC, 2009). The goal is for the Commission to move forward as an authority in the field of marine habitat management. As such, the Plan lists "protecting, restoring, and enhancing fish habitat and ecosystem health through partnerships, policy development, and education" as a Commission goal (ASMFC, 2009).

### 3.4.5 Ecosystem Structure and Function

The Ecosystem Component under P2 considers the broad ecological community and ecosystem in which the fishery operates and addresses system-wide issues, primarily impacted indirectly by the fishery, including ecosystem structure, trophic relationships and biodiversity.

<sup>20</sup> For details, see: <http://www.nero.noaa.gov/hcd/list.htm>

<sup>21</sup> See: <http://nero.noaa.gov/nero/fishermen/charts.html> and <http://www.nero.noaa.gov/nero/regs/infodocs/MultsClosedAreas.pdf>

The pelagic longline fishery primarily targets large predatory fish, with the bulk of the catch by weight and numbers comprised of swordfish, bigeye and yellowfin tuna but also dolphinfish. In addition to these species, up to 35 other billfish, tuna, shark and smaller pelagic or coastal fish species, marine mammals, and marine turtles are also caught. The fisheries under assessment take place within the water column with only limited contact on the bottom occurring with handline buoy gear; therefore, ecosystem impacts are considered only to result from removal of species or functional groups from the system. The impacts of the handline buoy gear are considered to be minimal due to selective nature of the gear, but impacts from this gear associated with removal of swordfish will also contribute to impacts of this species removal.

Ecosystem-level impacts resulting from species or functional groups could include:

- Changes to the trophic relationships or structure
- Changes to the size composition of the ecological community
- Changes in biodiversity of the ecological community (e.g. alterations to species evenness and dominance) caused by direct or indirect effects of fishing
- Changes in the distribution of species

Based on the proportion of higher level predators making up the largest proportion of bycatch species, we consider changes to trophic relationships or structure to be the most serious threat from the fishery to the ecosystem.

Much debate continues over the extent to which pelagic longline fisheries impact ecosystem function through removal of top or apex predators and the ability to predict associated impacts remains limited (Myers *et al*, 2007). Several marine and terrestrial studies implicate removal of apex predators in trophic cascades and a shift in ecosystem functioning (Ritchie and Johnson, 2009, Casini *et al*, 2009). One study which explores data from the north Atlantic coast of the US (Myers *et al*, 2007), illustrates declines in 11 shark species (including several species also caught in the fishery under assessment) over a 35 year period (1972-2007), corresponding with increased abundance of their ray, skate and small shark prey. Implications from the paper are that trends in shark and ray data from the UNC survey, which intercepts sharks on their seasonal migrations, might indicate Atlantic coast-wide trends in species surveyed. Declines in large coastal shark species which have Atlantic-wide distributions have been documented (NMFS, 2009), but increases in mid-level predators are not widely reported. A quantitative modelling study by Cox *et al* (2002) of the trophic impacts of fishing and effects on tuna dynamics in the central Pacific Ocean found limited evidence of trophic impacts associated with declining apex predator abundance, attributing this result to the difficulties of applying detailed trophic models to open ocean systems in which ecological and fishery data uncertainties are large.

Mean Trophic Index (MTI) is one of eight indicators that the Conference of the Parties to the Convention on Biological Diversity (CBD) identified in 2004 (CBD, 2004)<sup>22</sup> to monitor progress towards reaching 2020 target reductions in current rates of biodiversity loss (Pauly and Watson, 2005). Trophic levels express the position of an animal in a food web, relative to producers; MTI combines the fractional trophic level for each species group weighted by catch proportions into an average for a system. Trends in MTI can indicate trends in abundance and richness of higher trophic level fish species. Additional indicators related to the MTI include, approximate maximum length (ML) and the 'Fishing in Balance' (FiB) index which provides a measure of the balance between catches and trophic level (Pauly and Watson, 2005).

There is some evidence, based on the MTI of reported landings that mean trophic level of the Southeast US Continental Shelf Large Marine Ecosystem (Southeast US LME) is decreasing, with

<sup>22</sup> CBD 2004 Annex 1, decision VII/30 The 2020 biodiversity target: a framework for implementation, p351. Decisions from the Seventh Meeting of the Parties of the CBD, Kuala Lumpur, February 2004, Montreal, Secretariat of the CBD.

some fluctuations (Sea Around Us, 2001<sup>23</sup>). Sharp declines in the FiB index since 1970s also suggest the LME is undergoing a ‘fishing down’ of the food web (Pauly et al., 1998) with no corresponding increase in landings to compensate for the decline in the mean trophic level of the catch (Sea Around Us, 2001). Pauly and Watson (2005) define the FiB index such that its value remains the same when a downward trend in mean trophic level is compensated for by an increase in the volume of ‘catch,’ as should happen given the pyramidal nature of ecosystems and the transfer efficiency of about 10% between trophic levels. A decrease in FiB (<0) indicates that a fishery is withdrawing biomass from the system to the extent that ecosystem functioning is impaired.

Similarly, there is evidence that the mean trophic level of reported landings in the Northeast US continental shelf LME have declined since the early 1960s when the rate of exploitation of demersal fish species was high (Pauly and Watson, 2005). The FiB showed a similar decrease as the mean trophic level, implying that the increase in reported landings of the 1970s did not compensate for the decline in the MTI over that period.

However, interpretation of the MTI and FiB indices in relation to the fishery under assessment is difficult for the following reasons. Catches of large pelagic species ( $\geq 90$ cm) represent a very small proportion of all catches taken across all gears and flag states within the US Southeast (Figure 15) and Northeast US continental shelf LME regions. For the Southeast LME, although the pelagic longline fishery is likely to have contributed to the removal of large pelagics as well as some of the medium sized pelagics taken which constitute a greater proportion of the total catch, catches from longline gears have represented <1% of average annual total catches during the period illustrated in Figure 15. Additionally, location of the fishery under assessment corresponds with only a small portion of the area from which the catch data used to generate the MTI for the Southeast LME originated (Figure 16). For the Northeast US continental shelf LME, tuna and billfish and pelagic longline gear fail to make significant contributions to overall catch and gear use for the region, respectively (Figure 17 and Figure 18).

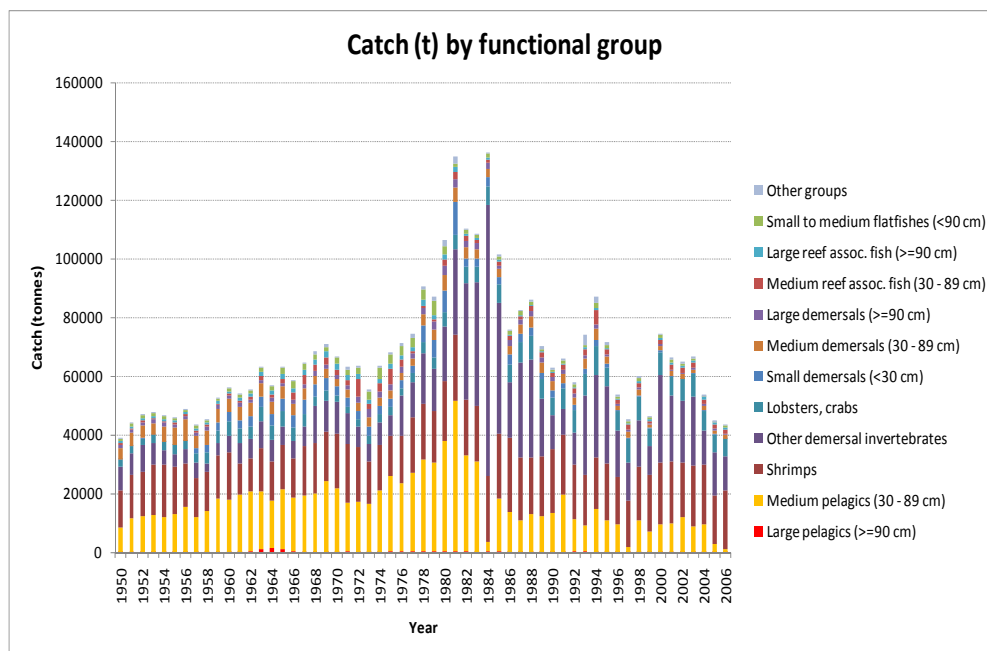


Figure 15 Total catch (tonnes) taken within the Southeast US LME by all gear types and all flag states between 1950 and 2006 by functional group. Source <http://www.seaaroundus.org/>

<sup>23</sup> <http://www.seaaroundus.org/lme/6/200.aspx>

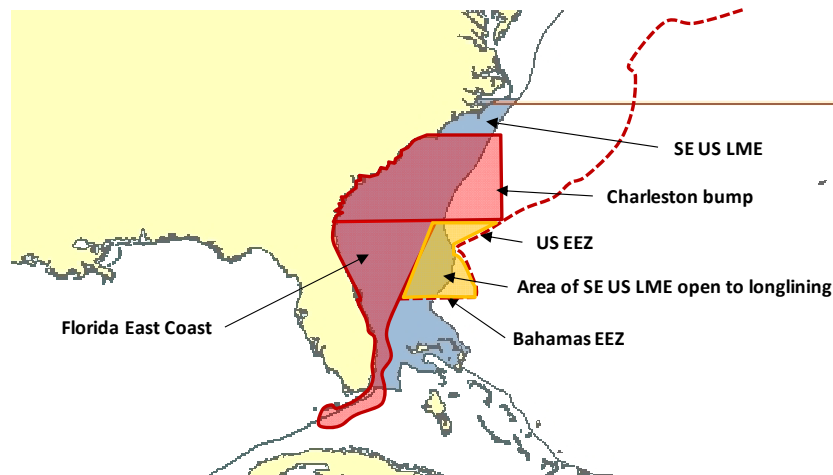


Figure 16 Map illustrating the location of the fishery (shaded orange) relative to the U.S. Southeast Continental Shelf Large Marine Ecosystem (shaded pale blue) and bounded by areas closed to pelagic longlining (Florida East Coast) and the US and Bahamas EEZ.

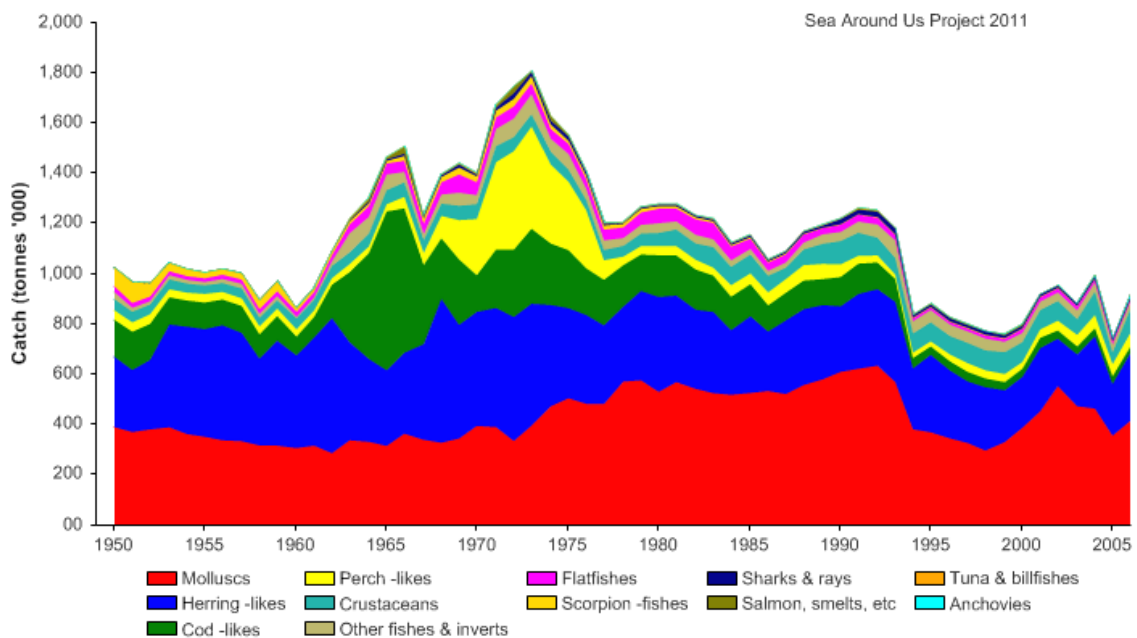


Figure 17 Landings by commercial groups in the Northeast U.S. continental shelf LME.  
Source <http://www.seaaroundus.org/lme/7/2.aspx>

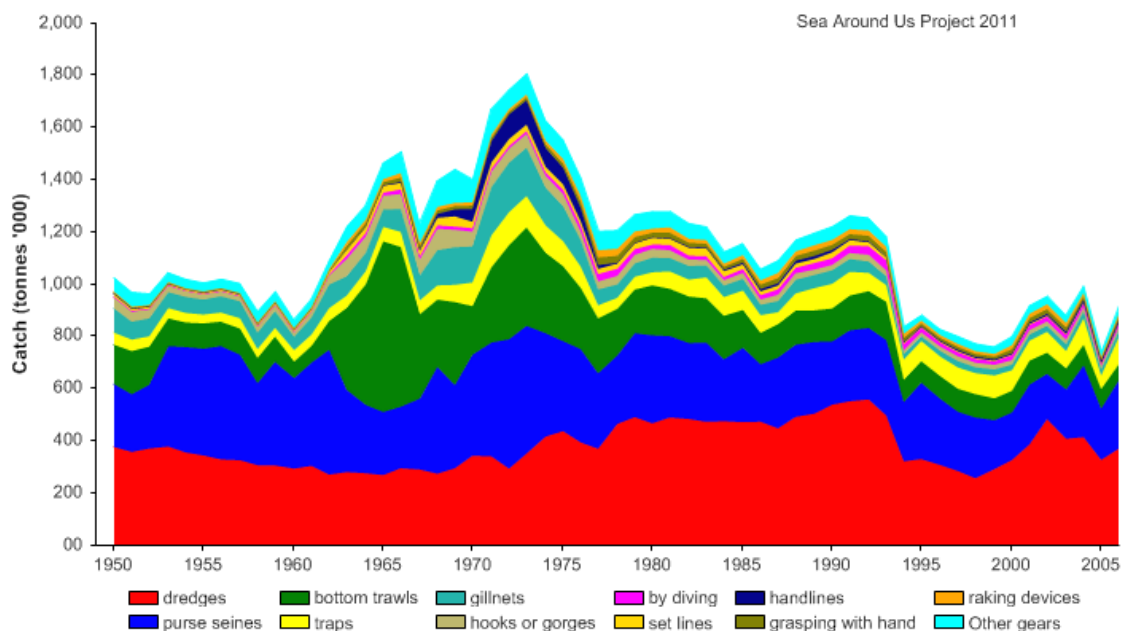


Figure 18 Landings by gear type in the Northeast U.S. continental shelf LME.  
Source <http://www.seaaroundus.org/lme/7/5.aspx>

### Ecosystem approach to management in the US

Although the majority of fisheries management plans developed to date in the US focus on single species or species complex approaches to management (e.g. FMPs), there have been recent developments within NMFS and NOAA to incorporate Ecosystem Based Management (EBM) into future frameworks for managing sustainability of US fisheries.

In response to a call from Congress, in 1999 NMFS created the National Marine Fisheries Service Ecosystem Principles Advisory Panel (EPAP) to:

- 1) assess the extent to which ecosystem principles are currently applied in fisheries research and management;
- 2) recommend how best to integrate ecosystem principles into future fisheries management and research.

The EPAP determined that although NMFS and some of the US Regional Fisheries Management Councils already consider and apply some of the principles, goals and policies associated with EBM, measures have not been applied comprehensively across NMFS, councils or ecosystems (EPAP, 1999) due to lack of clear mandates, appropriate resources and knowledge gaps. The report produced by the panel included a summary of recommendations for immediate actions to make U.S. fisheries management and research more consistent with the ecosystem principles. These included the development of Fishery Ecosystem Plans (FEPs) by councils for ecosystems under their jurisdiction; EPAP recommended that Councils continue to use FMPs for single species and species complexes, but amend them to incorporate ecosystem approaches consistent with an overall FEP (SAFMC, 2009).

The objectives of an FEP are:

- To provide RFM Council members with a clear description and understanding of the physical, biological, and human/institutional context of ecosystems;
- Direct how that information should be used within FMPs; and
- Set policies by which management options would be developed and recommended.



- EPAP outlined eight elements that should be included in each FEP and recommended that the MSFCMA be amended to require FEPs.

FEP have yet to be incorporated into HMS FMPs, but the SAFMC developed an FEP for the South Atlantic Region in 2009 (SAFMC, 2009) relevant to the SAFMC FMP for dolphin and wahoo; embracing the 8 key elements put forward by the EPAP. These include:

- 1 Delineate the geographic extent of the ecosystem(s) that occur(s) within Council authority, including characterization of the biological, chemical and physical dynamics of those ecosystems, and “zone” the area for alternative uses.
- 2 Develop a conceptual model of the food web.
- 3 Describe the habitat needs of different life history stages for all plants and animals that represent the “significant food web” and how they are considered in conservation and management measures.
- 4 Calculate total removals – including incidental mortality – and show how they relate to standing biomass, production, optimum yields, natural mortality, and trophic structure.
- 5 Assess how uncertainty is characterized and what kind of buffers against uncertainty are included in conservation and management actions.
- 6 Develop indices of ecosystem health as targets for management.
- 7 Describe available long-term monitoring data and how they are used.
- 8 Assess the ecological, human, and institutional elements of the ecosystem which most significantly affect fisheries and are outside of Council/Department of Commerce authority, and include a strategy to address those influences.

At the Second Meeting of the Working Group on the Future of ICCAT, the US, Canada, Brazil, and Norway submitted a Draft Working Document on the Principles of Decision making for ICCAT Conservation and Management Measures.<sup>24</sup> The draft working document contained an outline for a decision-making framework that would be consistent with the Precautionary Approach. The Working Group itself noted that both the Precautionary Approach and the Ecosystem Approach are fundamental to ICCAT’s objectives. ICCAT is currently assessing whether the precautionary approach to fisheries management should be explicitly included in the Convention through an amendment to the Convention text. The track record therefore indicates that the on-going activities of the US Government at ICCAT are already consistent with the achievement of this Condition.

The regional fishery management councils for the US east coast (south Atlantic, Mid Atlantic, and New England Fishery Management Councils) have undertaken ecosystem based approaches to various degrees. Although the regional fishery management councils do not manage HMS species, the consultation by the HMS division with the councils offers an opportunity for HMS to consider council ecosystem approaches.

Ecosystem approaches recently incorporated into current SAFMC FMPs primarily build on habitat considerations, initially developed under EFH requirements of the Magnuson-Stevens Act (see 3.4.4). However, future research and data needs to address the eight elements of the FEP are covered in considerable detail.

For the South Atlantic, a preliminary Ecopath model was developed for the Atlantic continental shelf adjacent to the southeastern US down to the 500m isobaths in 2001 (Okey and Pugliese, 2001; SAFMC, 2009). The Ecopath model (Polovina, 1984) is a quantitative description of energy flows in a food web; it creates a static, mass-balanced snapshot of the resources in an ecosystem and their interactions, represented by trophically linked functional groupings (SAFMC, 2009). The model is constructed by defining a model area and time, organizing species (and detritus) into the above mentioned functional groupings, and estimating the biological (i.e., energy) characteristics of each

<sup>24</sup> [http://www.iccat.es/Documents/Meetings/Docs/FIWG-Report\\_ENG.pdf](http://www.iccat.es/Documents/Meetings/Docs/FIWG-Report_ENG.pdf).



grouping. Ecopath models and their defined components are then ‘balanced’ in terms of mass or energy to gain insights into an ecosystem and its biotic components, and to obtain a whole-system view of the biological community.

The preliminary Ecopath model of the South Atlantic continental shelf was constructed to provide a quantitative framework which could be further refined as additional information becomes available. Special groups included in the preliminary model included groups managed under a federal fishery management plan and fish groups for which commercial or recreational landings exceeded 200 tonnes in any of the states within each area. SAFMC plan expand this model to cover the area that coincides with its jurisdiction, i.e. from the North Carolina/Virginia border through the Florida Keys, and from the upper reaches of wetlands to the 300 m isobaths and to continue to develop it, thus working towards the second and fourth key elements of the FEP.

Ecopath models can be analyzed in their static form (Christensen and Pauly 1992), but the dynamic simulation routines Ecosim and Ecospace (Walters et al. 1997, Walters et al. 1999) have expanded the utility of the approach considerably, enabling simulations of how ecosystem’s biota would respond to changes in fisheries harvest strategies or disturbance regimes (Ecosim). Future work should provide insight into fishery impacts, but the preliminary model does provide information on trophic levels and biomass estimates of a number of functional groups within the ecosystem likely to be influenced by the fishery under assessment (Table ). Development of broader ecosystem models by NMFS (ATLANTIS) is in early stages of development (Brand et al., 2007).

Table 29 Basic parameters used for and generated by a preliminary Ecopath model of the Southeast Atlantic continental shelf down to the 500m isobaths. Values in bold were calculated with the Ecopath software; other values were empirically based inputs. Omnivory index (= variance of prey trophic levels) is denoted by ‘OI.’ Source: Okey and Pugliese, 2001.

Group	Trophic level	OI	Biomass <sup>-2</sup> (t·km )	P/B <sup>-1</sup> (year )	Q/B <sup>-1</sup> (year )	EE
Billfishes	<b>4.3</b>	<b>0.371</b>	0.005	0.44	5.29	<b>0.962</b>
Sharks (& alligators)	<b>4.3</b>	<b>0.302</b>	0.104	0.43	4.18	<b>0.628</b>
Tuna	<b>4.2</b>	<b>0.316</b>	0.024	0.85	12.00	<b>0.801</b>
Toothed cetaceans	<b>4.1</b>	<b>0.174</b>	0.058	0.10	27.00	<b>0.000</b>
Mackerel	<b>4.0</b>	<b>0.069</b>	0.207	0.38	8.00	<b>0.941</b>
Groupers	<b>4.0</b>	<b>0.202</b>	<b>0.125</b>	0.70	5.00	0.950
Jacks	<b>3.9</b>	<b>0.111</b>	0.068	0.56	9.20	<b>0.854</b>
Snappers	<b>3.9</b>	<b>0.225</b>	<b>0.125</b>	0.57	5.40	0.950
Pelagic piscivores	<b>3.9</b>	<b>0.270</b>	0.232	0.86	13.50	<b>0.837</b>
Octopods	<b>3.9</b>	<b>0.193</b>	<b>0.072</b>	3.10	7.30	0.980
Demersal piscivores	<b>3.8</b>	<b>0.193</b>	<b>0.203</b>	0.84	8.10	0.950
Marine birds	<b>3.8</b>	<b>0.716</b>	0.001	0.10	80.00	<b>0.800</b>
Benthic piscivores	<b>3.8</b>	<b>0.340</b>	<b>0.140</b>	0.39	8.73	0.950
Drum and croaker	<b>3.4</b>	<b>0.254</b>	0.722	0.47	7.34	<b>0.915</b>
Benthic invert-eaters	<b>3.4</b>	<b>0.164</b>	<b>0.602</b>	1.73	13.57	0.950
Squid	<b>3.4</b>	<b>0.205</b>	1.900	2.43	33.00	<b>0.966</b>
Flounder	<b>3.3</b>	<b>0.148</b>	<b>0.346</b>	0.30	9.46	0.950
Benthic rays/skates	<b>3.3</b>	<b>0.452</b>	0.465	0.40	8.96	<b>0.769</b>
Lobsters	<b>3.2</b>	<b>0.325</b>	<b>0.364</b>	0.90	8.20	0.950
Baleen whales	<b>3.2</b>	<b>0.213</b>	0.144	0.05	10.90	<b>0.000</b>
Demers. planktivores	<b>3.1</b>	<b>0.060</b>	<b>0.114</b>	2.60	10.00	0.980
Sea turtles	<b>3.1</b>	<b>0.412</b>	0.007	0.19	3.50	<b>0.471</b>
Dem. invert-eaters	<b>3.1</b>	<b>0.472</b>	<b>2.416</b>	0.77	8.71	0.950
Stomatopods	<b>3.0</b>	<b>0.653</b>	<b>2.845</b>	1.34	7.43	0.980
Pelagic planktivores	<b>3.0</b>	<b>0.304</b>	<b>9.416</b>	0.89	8.54	0.980
Other fishes	<b>3.0</b>	<b>0.086</b>	<b>22.240</b>	0.70	7.04	0.980
Forage fishes	<b>2.9</b>	<b>0.202</b>	<b>25.065</b>	0.93	13.88	0.990
Jellies	<b>2.8</b>	<b>0.160</b>	<b>0.270</b>	40.00	80.00	0.950

Group	Trophic level	OI	Biomass <sup>-2</sup> (t·km <sup>-2</sup> )	P/B <sup>-1</sup> (year <sup>-1</sup> )	Q/B <sup>-1</sup> (year <sup>-1</sup> )	EE
Crabs	2.7	0.316	9.261	1.38	8.50	0.980
Shrimp	2.7	0.268	7.639	3.16	19.20	0.980
Demers. omnivores	2.6	0.382	0.890	1.47	21.87	0.950
Echinoderms	2.3	0.225	25.000	1.20	3.70	0.709
Sessile epibenthos	2.2	0.144	78.605	0.80	9.00	0.850
Benthic macro & meio	2.0	0.040	67.314	5.08	21.52	0.990
Bivalves	2.0	0.011	55.000	1.22	23.00	0.813
Manatees	2.0	0.000	0.001	0.10	36.50	0.000
Zooplankton	2.0	0.000	36.500	13.00	43.30	0.910
Macroalgae	1.0	0.000	52.096	4.00	-	0.800
Microphytobenthos	1.0	0.000	37.000	55.57	-	0.328
Phytoplankton	1.0	0.000	5.645	332.67	-	0.990
Sea grasses	1.0	0.000	26.507	7.30	-	0.500
Detritus	1.0	0.362	518.000	-	-	0.559

The Mid-Atlantic Fishery Management Council (MAFMC) and NMFS have taken a number of steps to assess ecosystem-based management goals and needs in addressing existing and potential ecosystem issues, including 13 public scoping meetings and 3 workshops (MAFMC and NMFS, 2006). The vast majority of people who participated in public scoping meetings, including the public, Ecosystem Committee, and Council staff supported the concept of development of an FEP as a framework for organizing ecosystem-related information and for enhancing decision-making when goals of single-species or fishery-by-fishery management approaches conflict. The MAFMC has published a draft timeline for an Ecosystem Based Fishery Management Plan Advisory Document (aka Fishery Ecosystem Plan) that consists of working group meetings during 2012 and a draft scheduled in 2013.<sup>25</sup> The MAFMC has been reporting progress on their ecosystem approach to fisheries management.<sup>26</sup>

The MAFMC believes that the overall ecosystem goal should be to manage for sustainability and productivity, and that the development of goals and objectives should be a regional process with stakeholder involvement. The FEP would not supplant existing FMPs but would instead provide an overarching framework for all FMPs overlapping within the geographically delineated ecosystem (MAFMC and NMFS 2006).

In 2010, the MAFMC also hosted a habitat-ecosystem workshop in partnership with the NMFS Office of Habitat Conservation, the NMFS Office of Science & Technology, and the NMFS Northeast Regional Office with the goal of identifying projects and opportunities for the MAFMC to utilize the latest habitat and ecosystem science, policy, and management to provide healthy mid-Atlantic fisheries (Packer, 2011). The workshop participants identified proposed project and action recommendations for the MAFMC.<sup>27</sup> The MAFMC has already begun to incorporate ecological considerations into existing FMPs and to transition into ecosystem-based management (EBM) by appointing an Ecosystem Subcommittee of the Council's Scientific and Statistical Committee. The Ecosystem and Ocean Planning Committee of the MAFMC will prioritize opportunities identified in this workshop and develop a list of priorities and an action plan for full Council consideration (Packer 2011).

In late 2008, the Scientific and Statistical Committee (SSC) of the Northeast Fishery Management Council (NEFMC) became informed of the Council's interest in developing and implementing an

<sup>25</sup> See: [http://www.mafmc.org/meeting\\_materials/SSC/2012-03/EBFMAD%20timeline\\_draft\\_v2%20\(2\).pdf](http://www.mafmc.org/meeting_materials/SSC/2012-03/EBFMAD%20timeline_draft_v2%20(2).pdf)

<sup>26</sup> For more information:

[http://www.mafmc.org/meeting\\_materials/2012/August%202012/Presentations/Executive%20Comm\\_Ecosystem%20Approach%20to%20Fishery%20Management%20Update.pdf](http://www.mafmc.org/meeting_materials/2012/August%202012/Presentations/Executive%20Comm_Ecosystem%20Approach%20to%20Fishery%20Management%20Update.pdf)

<sup>27</sup> See: [http://mafmc.org/publications/MAFMC\\_Habitat\\_workshop\\_%20proceedings.pdf](http://mafmc.org/publications/MAFMC_Habitat_workshop_%20proceedings.pdf)

Ecosystem-Based Fishery Management (EBFM) plan over the next 3-5 years. In response, the NEFMC published a white paper in 2010 on EBFM that provides a conceptual framework for moving towards this goal in New England (NEFMC SSC, 2010). A workshop was held in 2009 to consider an implementation framework of EBFM, examine international and national examples of EBFM in practice, and to identify steps to move forward in the Northeast. Adopting EBFM in the Northeast would consolidate the number of individual FMPs administered in the region and would facilitate consideration of important interactions among species and fisheries that are currently covered by separate management plans. During the transition to a full EBFM Plan, the SSC identified several areas of focus:

- Defining Ecosystem Production Units (EPUs) to serve as a basis of EBFM management units
- Identifying issues associated with ecosystem components of each EPU that requires attention under EBFM
- Defining EBFM objectives for each EPU and the risks of not achieving them
- Designing management strategies to achieve EBFM objectives and the processes to facilitate consensus
- Developing assessment tools to monitor progress towards EBFM objectives (NEFMC SSC 2010).

Stakeholder input has been encouraged during the process.<sup>28</sup> In addition to these efforts in the Northeast by the NEFMC, the New England Regional Ocean Council (NROC) also drafted a 2010 work plan to develop measures of ecosystem health and facilitate marine spatial planning.

## 3.5 Principle Three: Management System Background

### 3.5.1 Fishery governance and management objectives

Most species found in US Federal waters are managed by one of the eight regional Fishery Management Councils. These Councils, through the NMFS, implement regulations for species in their area. However, HMS, including Atlantic tunas, swordfish, sharks, and billfish are different in that they are found throughout the Atlantic Ocean and must be managed on domestic (federal) and international levels.

#### International Governance

Due to the trans-boundary distribution of the swordfish stock in the north Atlantic, the fishery falls under the jurisdiction of ICCAT. ICCAT is an inter-governmental RFMO responsible for the conservation of tunas and tuna-like species in the Atlantic Ocean and its adjacent seas. The organization was established in 1966 at a Conference of Plenipotentiaries, which prepared and adopted the International Convention for the Conservation of Atlantic Tunas in Rio de Janeiro, Brazil. After a ratification process, the Convention formally entered into force in 1969. The Convention was amended in 1984 and 1992.

The Convention establishes that ICCAT is the only organization that can undertake the range of work required for the study and management of tunas and tuna-like fishes in the Atlantic. ICCAT is responsible for the coordination of research by member countries focused on the effects of fishing on stock abundance, collection and analysis of information relative to current conditions and trends on the fishery resource in the area, and undertakes work in the compilation of data for other fish species caught incidentally, such as sharks, that are not investigated by another international fishery organization ([www.iccat.es](http://www.iccat.es)).

The Commission is open to membership from any government that is a member of the United Nations (UN), any specialized UN agency, or any inter-governmental economic integration organization constituted by States that have transferred to it competence over the matters

<sup>28</sup> See: <http://nefmc.org/ecosystems/index.html>

governed by the ICCAT Convention (e.g. the EU). To date ICCAT has 48 contracting parties, including the United States.

ICCAT's financial position is strong, hence its governance platform from this perspective is stable. The Commission's Standing Committee on Finance and Administration (STACFAD) reported in 2009 that ICCAT's Working Capital Fund was far above that recommended by auditors. The agreed budget for calendar year 2010 was 2,917,577.25 Euros. The U.S. annual contribution is 219,021.57 Euros. The U.S. has also periodically provided extra-budgetary funds to ICCAT to support various initiatives.

Scientific advice on issues such as stock status and catch limits is provided by the SCRS and the results presented to the Commission. The Commission meets annually to review this advice and to develop conservation and management measures.

ICCAT's principle objective is to maintain populations at levels which will permit the maximum sustainable catch for food and other purposes. Since its establishment, ICCAT has implemented a wide range of tools for the conservation and management of stocks, including TAC and catch quotas (Member allocations), size limits, effort restrictions, observer programs, closed areas and seasons, vessel registration and information exchange, gear restrictions, and enforcement measures. ICCAT defines HCRs primarily through the definition of TACs intended to maintain or rebuild stocks to the MSY biomass.

With respect to the compatibility of ICCAT management with the Precautionary Approach, the 2008 Independent Review of ICCAT concluded that the ICCAT Convention has no provision regarding the Precautionary Approach (Hurry et al 2008). While ICCAT has not formally adopted the Precautionary Approach, some measures that it has adopted are based on the same principles, as contained in the UN Fish Stocks Agreement (UNFSA). A key recommendation from the Independent Review in 2008 was for ICCAT to formally and systematically adopt the precautionary approach.

There is a continuing debate within ICCAT regarding the implementation of a Precautionary Approach to the management of its fisheries, which can be traced back to 1997 when the SCRS formed an *ad hoc* Working Group to develop a discussion document of what "precautionary approaches" means in the context of ICCAT stocks.<sup>29</sup> The working group met in 1998 to develop terms of reference, and again in 1999 to conduct most of its work<sup>30</sup>. The Working Group elaborated a number of suggestions for candidate biological reference points and control rules, and suggested a simulation framework for the testing of their performance. Some of that work has been undertaken for several ICCAT stocks by individual scientists and the results are available either in the peer-reviewed literature or in ICCAT's Collective Volume series<sup>31</sup>. The *ad hoc* Working Group also stressed the importance of joint manager-scientist meetings in order to receive more guidance on issues such as candidate control rules, performance measures, and acceptable levels of risk.

The *ad hoc* Working Group has not met since 1999, and to date there has been no joint manager-scientist meeting as proposed, but in 2008, there was a Joint Canada-ICCAT Workshop on the Precautionary Approach for Western Bluefin Tuna.<sup>32</sup> Among other things, this workshop considered the form of a harvest strategy that would be required to satisfy the Precautionary Approach.

<sup>29</sup> [http://www.iccat.int/Documents/SCRS/ExecSum/WG\\_PA.pdf#search='precautionary approach'](http://www.iccat.int/Documents/SCRS/ExecSum/WG_PA.pdf#search='precautionary approach')

<sup>30</sup> ICCAT. 2000. Report of the Meeting of the ICCAT Ad Hoc Working Group on Precautionary Approach. 2000. ICCAT Col. Vol. Sci. Pap. 51(6):1941-2056

<sup>31</sup> V. Restrepo summary in the report of the Joint Canada-ICCAT Workshop on the Precautionary Approach for Western Bluefin Tuna.

<sup>32</sup> [http://www.iccat.int/Documents/Meetings/Docs/SCRS/SCRS-08-013\\_Gavaris\\_et\\_al.pdf#search='precautionary approach'](http://www.iccat.int/Documents/Meetings/Docs/SCRS/SCRS-08-013_Gavaris_et_al.pdf#search='precautionary approach')

In recent years, the discussion has been continued within the Working Group on the Future of ICCAT, first convened by ICCAT in late 2009<sup>33</sup>, partly in response to the findings of the 2008 Independent Review (See Section 3.5.7 for more details). At its second meeting in May 2011<sup>34</sup>, the Working Group noted that the Precautionary Approach is fundamental to ICCAT's objectives and that ICCAT has already taken a number of steps to implement the Precautionary Approach. Some ICCAT Contracting Parties expressed the view that the Convention objective itself is inconsistent with the precautionary approach because  $F_{MSY}$  is considered a target rather than a limit not to be exceeded. This may require an amendment to the Convention language to enshrine the concept of the precautionary approach in ICCAT's long term objectives, although some Contracting Parties have noted that ICCAT can continue to implement the Precautionary Approach without reference to it being formally incorporated into the Convention. The Working Group had its third meeting in May 2012<sup>35</sup> where similar sentiments were expressed, with most participants concluding that text to enshrine the concept of the Precautionary Approach should be considered in any future Convention amendment process.

## Federal Governance

### *Atlantic Tunas Convention Act (ATCA)*

The implementing legislation for ICCAT in the US is the Atlantic Tunas Convention Act (ATCA) of 1975 (16 U.S.C. 971 et. seq.). The ATCA provides that not more than three Commissioners shall represent the United States in ICCAT and that of these three, one can be a salaried employee of any state or political subdivision thereof, or of the Federal Government. Of the two Commissioners who are not government employees, one must have knowledge and experience regarding commercial fishing in the Atlantic Ocean, Gulf of Mexico or Caribbean Sea and the other must have similar knowledge and experience regarding recreational fishing.

Under ACTA, the U.S. Commissioners are required to constitute an Advisory Committee to the U.S. National Section to ICCAT. The rules governing the composition of the AC is as follows:

- (1) not less than five nor more than twenty individuals appointed by the United States Commissioners who shall select such individuals from the various groups concerned with the fisheries covered by the Convention; and
- (2) the Chairs (or their designees) of the New England, Mid-Atlantic, South Atlantic, Caribbean, and Gulf of Mexico Fishery Management Councils (FMCs).

The Committee generally consists of the maximum 20 public members and the five FMC representatives. The Advisory Committee is invited to attend all non-executive meetings of the U.S. Commissioners and, at such meetings, shall have the opportunity to examine and to be heard on all proposed programs of investigation, reports, recommendations, and regulations of the Commission.

The Commissioners may establish species working groups for the purpose of providing advice and recommendations to the Commissioners and to the Advisory Committee on matters relating to the conservation and management of any highly migratory species covered by the Convention. Any species working group shall consist of no more than seven members of the Advisory Committee and no more than four scientific or technical personnel. The Commissioners have established four working groups: billfish, swordfish and sharks, bluefin tuna, and BAYS (bigeye, albacore, yellowfin, and skipjack) tunas.

<sup>33</sup> [http://www.iccat.int/Documents/Meetings/Docs/2009\\_FUTURE\\_ICCAT\\_ENG.pdf](http://www.iccat.int/Documents/Meetings/Docs/2009_FUTURE_ICCAT_ENG.pdf)

<sup>34</sup> <http://www.atlafco.org/Docs/11028201151450PM.pdf>

<sup>35</sup> [http://www.iccat.int/Documents/Meetings/Docs/2012\\_FIWG\\_REP\\_ENG.pdf](http://www.iccat.int/Documents/Meetings/Docs/2012_FIWG_REP_ENG.pdf)

## *Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA)*

The principle legislative instrument for fisheries management in the US is the MSFCMA. The MSFCMA refers specifically to the management of HMS<sup>36</sup> through international cooperation (**16 U.S.C. 1812**):

- *The United States shall cooperate directly or through appropriate international organizations with those nations involved in fisheries for highly migratory species with a view to ensuring conservation and shall promote the achievement of optimum yield of such species throughout their range, both within and beyond the exclusive economic zone.*
- *In managing any fisheries under an international fisheries agreement to which the United States is a party, the appropriate Council or Secretary shall take into account the traditional participation in the fishery, relative to other nations, by fishermen of the United States on fishing vessels of the United States.*
- *If a relevant international fisheries organization does not have a process for developing a formal plan to rebuild a depleted stock, an overfished stock, or a stock that is approaching a condition of being overfished, the provisions of this Act in this regard shall be communicated to and promoted by the United States in the international or regional fisheries organization.*

The MSFCMA contains ten National Standards (NSs) which fishery managers must consider when preparing a Fishery Management Plan (FMP) or Amendment. These NSs are:

1. Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the U.S. fishing industry;
2. Conservation and management measures shall be based upon the best scientific information available;
3. To the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination;
4. Conservation and management measures shall not discriminate between residents of different states. If it becomes necessary to allocate or assign fishing privileges among various U.S. fishermen, such allocation shall be (A) fair and equitable to all such fishermen; (B) reasonable calculated to promote conservation; and (C) carried out in such manner that no particular individual, corporation, or other entity acquires an excessive share of privileges;
5. Conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose;
6. Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches;
7. Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication;
8. Conservation and management measures shall, consistent with the conservation requirements of the Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities;

<sup>36</sup> HMS are defined to be tuna species, marlin (*Tetrapturus* spp. and *Makaira* spp.), oceanic sharks, sailfishes (*Istiophorus* spp.), and swordfish (*Xiphias gladius*); tuna species are further defined as albacore tuna (*Thunnus alalunga*), bigeye tuna (*Thunnus obesus*), bluefin tuna (*Thunnus thynnus*), skipjack tuna (*Katsuwonus pelamis*), and yellowfin tuna (*Thunnus albacares*).

9. Conservation and management measures shall, to the extent practicable, (A) minimize bycatch and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch; and,
10. Conservation and management measures shall, to the extent practicable, promote the safety of human life at sea.

The National Standard Guidelines (NSGs) on how NMFS follows the NSs are published in the US Federal Register at 50 CFR Part 600 subpart D. National Standard 1 has been interpreted as being consistent with international agreements and criteria for precautionary approaches. Proposed guidelines for implementing the legislation have been translated into scientific and technical guidance for developing limit and target control rules, with some suggestions for defaults (Restrepo et al 1998). The control rules specify management actions (fishing mortality rate), based upon current stock status (Restrepo and Powers 1999).

The MSFCMA includes a specific section that addresses preparing and implementing FMPs for Atlantic HMS (16 U.S.C. §1854 (g)(1)(A-G)). In summary, the section includes, but is not limited to, requirements to:

- Consult with and consider the views of affected Councils, Commissions, and advisory groups;
- Evaluate the likely effects of conservation and management measures on participants and minimize, to the extent practicable, any disadvantage to U.S. fishermen in relation to foreign competitors;
- Provide fishing vessels with a reasonable opportunity to harvest any allocation or quota authorized under an international fishery agreement;
- Diligently pursue comparable international fishery management measures; and,
- Ensure that conservation and management measures promote international conservation of the affected fishery, take into consideration traditional fishing patterns of fishing vessels, are fair and equitable in allocating fishing privileges among U.S. fishermen and do not have economic allocation as the sole purpose, and promote, to the extent practicable, implementation of scientific research programs that include the tagging and release of Atlantic HMS (from NMFS 2007).

In 1990, an amendment to the MSFCMA<sup>37</sup> gave the US Secretary of Commerce (the Secretary) the authority (effective January 1, 1992) to manage HMS in the US exclusive economic zone (EEZ) of the Atlantic Ocean, Gulf of Mexico, and Caribbean Sea. At this time, the Secretary delegated authority to manage these species to NMFS, and NMFS in turn created the HMS Management Division. This Division manages and regulates the Atlantic HMS fisheries within the United States. Because the Fishery Management Councils were not regulating HMS, NMFS established an eight-phase administrative process for creating FMPs and other rulemaking on HMS (58 FR 49966):

**Phase 1** -- Planning and Scoping

**Phase 2** -- Preparation of Draft Documents; Consultations and Meetings

**Phase 3** -- Initial Public Review and Comment Period; NEPA Public Review and Comment Period; ANPR Public Review and Comment Period if Applicable; and Public Hearings

**Phase 4** -- Preparation of Revised Documents and Proposed Regulations; Consultations and Meetings

**Phase 5** -- Final Public Review and Comment Period; Proposed Regulations Published for Public Review and Comment

**Phase 6** -- Preparation of Final Documents and Final Regulations

**Phase 7** -- Approval and implementation

<sup>37</sup> Until 1996 the MSFCMA was known as the Magnuson Fishery Conservation and Management Act. In 1996, it was amended under the Sustainable Fisheries Act and became the Magnuson-Stevens Fishery Conservation and Management Act.

## Phase 8 -- Continuing and contingency fishery management

In addition to management under the MSFCMA, Federal fisheries operate under several other instruments of national legislation relating to Principle 2. These include the National Environmental Protection Act (NEPA), the Endangered Species Act (ESA), the Marine Mammal Protection Act (MMPA), the Migratory Bird Treaty Act (MBTA), and the Coastal Zone Management Act (CZMA). All of these laws apply to or provide protection for species and/or habitat that may be affected by the swordfish fishery.

### *National Environmental Policy Act (NEPA)*

Enacted on January 1, 1970, NEPA established the U.S. national policy regarding the the enhancement of the environment. Its most significant effect is to set out the procedural requirements for all federal government agencies to prepare Environmental Assessments (EAs) and Environmental Impact Statements (EISs). EAs and EISs contain statements of the environmental effects of proposed federal agency actions. NEPA's procedural requirements apply to all federal agencies in the executive branch, including NMFS. Federal management of the fishery under assessment is therefore subject to NEPA requirements.

### *Endangered Species Act (ESA)*

The ESA of 1973 requires the Federal Government to protect and conserve species and populations that are endangered or threatened with extinction. Federal or state actions that may impact endangered species, such as permitted fishing operations, must be minimized. Endangered species taken as bycatch in fishing operations include sea turtles, salmon, seabirds, and marine mammals. Observers monitor bycatch and, in some cases, certify that takes of endangered species do not exceed the authorized incidental take limit. Observer data are also used to prepare recovery plans, which generally include a requirement to reduce incidental capture of protected species in commercial fishing operations for marine species. Fisheries may be restricted or closed if they impose mortality rates on protected species that impede the recovery of the listed population. In 2007, the NMFS Office of Protected Resources finalized a rule under the ESA that provides NMFS with the authority to place fisheries observers aboard vessels in state and Federal fisheries operating in the territorial seas or EEZ where sea turtle interactions may occur. Observers will help determine whether existing measures to reduce sea turtle bycatch are working or whether new or additional measures are needed.

## 3.5.2 Management Measures

### Historical perspective

ICCAT splits the management of Atlantic swordfish between the North Atlantic, South Atlantic, and Mediterranean Sea (NMFS 2006). For the purposes of U.S. domestic management, the swordfish population is considered to consist of two discrete stocks divided at 5° N (NMFS 2006).

The first FMP for North Atlantic swordfish in the United States was established in 1985 and was primarily concerned with reducing the harvest of juvenile swordfish and the foreign impact on the domestic fishery. At this time, the Regional Fishery Management Councils were responsible for the management of Atlantic HMS.

The first ICCAT management measures for the North Atlantic swordfish stock were implemented in 1991, when countries were requested to reduce their catch by 15% over their 1988 levels. Minimum size limits were also introduced at that time.

In 1999, the United States developed a new FMP for Atlantic Tunas, Swordfish, and Sharks using similar ideas as the 1985 FMP and calling for an international rebuilding plan. Also in that year, ICCAT established a 10-year rebuilding plan to protect juvenile swordfish. Specifically, ICCAT parties



committed to rebuild North Atlantic swordfish to the biomass that would produce MSY within 10 years, with a greater than 50 percent probability. Among other things, the swordfish rebuilding program included a TAC and country specific allocations (NMFS 2010a).

ICCAT set a TAC for the North Atlantic stock in 2002 of 10,400 mt (10,200 mt retained and 200 mt discarded). The reported landings were about 9,000 mt and the estimated discards were about 535 mt. In 2003, the TAC was 14,000 mt (13,900 mt retained and 100 mt discarded) while reported landings were about 10,800 mt and estimated discards about 460 mt (NMFS 2006). TAC in the North Atlantic in 2004 was 14,000 mt; reported landings were 11,867 mt with discards totaling an estimated 417 mt. Reports for 2004 were considered provisional and subject to change (SCRS 2005 in NMFS 2006).

By 2006, the stock assessment for North Atlantic swordfish indicated that the stock was almost rebuilt only seven years into the 10 year rebuilding program. At this time, ICCAT adopted revisions to the rebuilding program setting a TAC of 14,000 mt per year for 2007 and 2008 (NMFS 2010a). Given the improved status of the resource, several ICCAT members sought and received increased access to the resource. These increases were possible due to U.S. flexibility in allowing temporary access to existing U.S. under harvests. The recommendations also retained a provision allowing the United States to harvest of up to 200t of its annual catch limit between 5 degrees North latitude and 5 degrees South latitude and continued the transfer of 25mt of NSW to Canada annually.

ICCAT has applied two minimum size options to the entire Atlantic: 125 cm LJFL with a 15% tolerance for undersized fish, or 119 cm LJFL with zero tolerance and evaluation of the discards. The United States has implemented a minimum legal size regulation that corresponds to the ICCAT 119 cm limit (See Section 3.5.4).

According to ICCAT figures, in 2000 the percentage of swordfish less than 125 cm LJFL reported landed throughout the Atlantic was about 21% (by number) for all nations fishing in the Atlantic. If the estimated discards are included in the calculation the percentage increases to about 25%.

### **Current management**

The Final Consolidated Atlantic Highly Migratory Species FMP was published in 2006. Management objectives were defined in the FMP as follows (from NMFS 2006):

- Better coordinate domestic conservation and management of the fisheries for Atlantic tunas, swordfish, sharks, and billfish, considering the multi-species nature of many HMS fisheries;
- Simplify management of Atlantic HMS, to the extent practicable;
- Update the ecological, economic, and social data regarding HMS fisheries;
- Reduce bycatch and bycatch mortality, to the extent practicable, while also minimizing the economic and social impacts on related fisheries;
- Reduce mortality, including dead discards and post-release mortality, to the extent practicable, of Atlantic HMS in directed and non-directed fisheries;
- Improve, to the extent practicable, data collections or data collection programs;
- Implement, to the extent practicable, the bycatch reduction strategy using the standardized bycatch reduction methodology; and,
- Begin the review process for updating Essential Fish Habitat (EFH) identifications for Atlantic HMS, as needed.

The FMP took a number of actions specifically relating to swordfish management:

- mandatory workshops for fishermen and dealers;
- two small closures consistent with regulations implemented by the Gulf of Mexico Fishery Management Council;

- change of the fishing year for tunas, swordfish, and billfish back to the calendar year; authorization of additional fishing gears;
- clarification of regulations;
- allows the use of buoy gear in the commercial swordfish fishery; and
- requires reporting of swordfish caught recreationally outside of a fishing tournament.

There have been four amendments to the Consolidated FMP:

- Amendment 1 (2009) updated EFH designations for all Atlantic HMS species.
- Amendment 2 (2008) primarily addressed shark management.
- Amendment 3 (2010) also primarily addressed preventing overfishing and rebuilding of shark stocks while adding dogfish to the FMP (NMFS 2010b).
- Amendment 4 (predraft) address HMS fishery management measures in the U.S. territories of Puerto Rico and the U.S. Virgin Islands (USVI) (NMFS 2009b).

The purpose of Amendment 4 is to enact management measures that better correspond with the traditional operation of the fishing fleet in the Caribbean region and to provide NOAA Fisheries with an improved capability to monitor and sustainably manage those fisheries (NMFS 2009b).

In 2007 U.S. regulation were amended to implement two recommendations from ICCAT: establishing baseline quotas and setting caps on the carryover of underharvests. This facilitated the transfer of 15% of the U.S. North Atlantic swordfish baseline quota into the reserve category, which would allow it to be transferred to other ICCAT parties with quota allocations in the event it is not required by U.S. fishers. Plans were also made for website catch reporting in the angling and charter/headboat groups.

In 2008 ICCAT agreed to roll over the northern swordfish management measures through 2009 pending completion of a new stock assessment (NMFS 2010a). The 2009 stock assessment indicated that the stock is rebuilt but recommended a modest reduction in the TAC. In 2009 ICCAT again agreed to roll over the existing measures to 2010 but with a reduced TAC of 13,700mt, in line with scientific advice. The existing quota allocations for EC, United States, Canada, and Japan remain unchanged for 2010.

Management in of the fishery in 2012 falls under the provisions of ICCAT Recommendation 11-02<sup>38</sup>, which includes the following measures:

- An overall goal of maintaining  $B_{MSY}$  with a greater than 50% probability
- North Atlantic swordfish total allowable catch maintained at 13,700mt in 2012 and 2013
- United States baseline allocation maintained at 3,907mt
- Annual quota transfer from U.S. to Canada Removed
- 150mt quota transfer from U.S. to Morocco established<sup>39</sup>
- Under harvest carryover limit altered:
  - CPCs with an allocation greater than 500mt limited to an under harvest carryover of 25 %
  - All other CPCs under harvest carryover limit maintained at 50%
- Overharvest rules for CPCs that catch over their allocation in the event that the total annual catch is exceeded: over harvest to be paid back through an adjustment of future catch limits.
- The SCRS is to develop a Limit Reference Point for the North Atlantic swordfish stock in advance of the next stock assessment (currently scheduled for 2013).

<sup>38</sup> [http://www.iccat.es/Documents/Recs/RECS\\_ADOPTED\\_2011\\_ENG.pdf](http://www.iccat.es/Documents/Recs/RECS_ADOPTED_2011_ENG.pdf), pages 13-15

<sup>39</sup> This tonnage is intended to facilitate collaborative research between Morocco and the U.S. on fishery gear technologies and techniques that advance ecosystem approaches to fisheries management and will also help support Morocco's efforts to eliminate the use of driftnets.

- Future decisions on the management of this stock shall include a measure that would trigger a rebuilding plan, should the biomass decrease to a level approaching the defined LRP as established by the SCRS.
- Conservation and management measures to be developed in 2013 for the following three years on the basis of SCRS advice resulting from the new stock assessment as well as the ICCAT Criteria for the Allocation of Fishing Possibilities (see Section 3.5.4).

Domestic management measures and market factors have impacted ability of U.S. fleet to fully harvest its ICCAT swordfish quota allocation in the past. This has led other ICCAT parties to request additional North Atlantic swordfish quota to be transferred from the U.S. allocation. The U.S. government has sought to establish management measures that provide additional opportunities for U.S. vessels to harvest swordfish, thereby could increasing landings and more fully utilizing the North Atlantic swordfish allocation. In addition, ICCAT has agreed that the US shall be allowed to count up to 200 t of its swordfish catch taken from the area between 5°N and 5°S, against its uncaught North Atlantic swordfish catch limit.

### 3.5.3 Decision-Making Processes

#### ICCAT

The ICCAT Convention provides in Article III (3) that decisions of the Commission shall be taken by a majority of the Contracting Parties, Cooperating non-Contracting Parties, Entities or Fishing Entities (CPCs), except where otherwise provided. An exception is made for *“recommendations designed to maintain the populations of tuna and tuna-like fishes that may be taken in the Convention area at levels which will permit the maximum sustainable catch,”* under Article VIII. Such recommendations are to be made, *inter alia*, at the initiative of the Commission if an appropriate Panel on relevant species has not been established, or with the approval of at least two-thirds of all the Parties if such a Panel has been established.

In practice, ICCAT has taken most decisions by consensus. It has been suggested by some observers that, even though it is a preferred approach rather than a mandated one for ICCAT, consensus may lead to blocking of effective decision-making. Decisions are explained in ICCAT documents. Hurry et al 2008 concluded that achieving consensus at ICCAT is becoming more difficult due to increasing membership and that the decision-making procedure may not always ensure the adoption of conservation and management measures “in a timely and effective manner,” as required by the UNFSA.

As with other RFMOs, ICCAT recommendations are binding only insofar as the CPCs agree to implement them domestically. Each recommendation becomes effective for all CPCs six months after the date of the notification from the Commission. Within that six month period, one or more CPCs can present an objection to a recommendation, in which case the measure is not binding on those CPCs. In the course of ICCAT’s 40 years of existence, six Parties have presented and confirmed objections to three recommendations (Hurry et al 2008).

Although there has never been any disagreement with legal repercussions within the framework of ICCAT, there is no specific mechanism in place to resolve a dispute between CPCs. There is also no specific mechanism to resolve a dispute that might result in a CPC presenting an objection to a recommendation agreed by the Commission. The Review Panel concluded that the Commission should review its decision-making procedure with a view to creating mechanisms for minimizing the objections and reviewing the objections through an expert body, taking into account the recent trends in other RFMOs (Hurry et al 2008).

## Federal

As part of the 1996 re-authorisation of the MSFCMA, NMFS established two advisory panels for Billfish and HMS (HMS AP) to assist in the development of FMPs and FMP amendments for Atlantic HMS. APs are made up of recreational and commercial fishermen, charter boat operators, buyers, sellers and consumers who are knowledgeable about a particular fishery. Under the MSFCMA, advisory panels are required to participate in all aspects of the development of the FMP or FMP amendment. They must be balanced in their representation of commercial, recreational, and other interests and consist of not less than 7 individuals who are knowledgeable about the fishery for which the plan or amendment is developed. Membership is selected from among members of advisory committees and species working groups appointed under Acts implementing relevant international fishery agreements pertaining to highly migratory species; and other interested persons. The representation on the current HMS AP is as follows:

Academic	4
Commercial	12
Environmental	4
Recreational	12
ICCAT Chair	1
<b>Total</b>	<b>33</b>

NMFS holds two meetings of the HMS AP per year. The intent of these meetings is to consider alternatives for the conservation and management of highly migratory species. Decisions and recommendations made by the AP are considered to be advisory in nature.

The MSFCMA requires consideration of fishing communities in all management actions. Disputes are resolved in an open and transparent manner through deliberations and recommendations by APs, by debate within the Council<sup>40</sup>, and access to the courts by aggrieved parties. In addition, under the Atlantic Tunas Convention Act (ACTA) the U.S. must implement any management recommendations adopted by ICCAT. NMFS reports provide explanations for management actions.

### 3.5.4 Incentives for Sustainable Fishing

ICCAT does not directly provide any subsidies that contribute to unsustainable fishing. Some CPCs that participate in the swordfish fishery have been known to provide subsidies to their fishing fleets, leading to overcapacity, but this is not something that is under the purview of the Commission.

#### Allocation of Fishing Possibilities by ICCAT

In 2001, ICCAT established its “Criteria for the Allocation of Fishing Possibilities” (ICCAT Recommendation 01-25) that included 17 criteria and nine conditions to be considered when allocating quota within the ICCAT framework. To qualify to receive quota, participants in the fishery must be a Contracting or Cooperating non-Contracting Party, Entity or Fishing Entity and also have the ability to apply the conservation and management measures of ICCAT. Allocations take into account the historical catches, interests, fishing patterns and fishing practices of qualifying participants.

Quota level depends on the status of the stock(s) to be allocated in relation to MSY, and the existing level of fishing effort in the fishery, taking into account the contributions made by CPCs to conserve,

<sup>40</sup> Federal management of HMS does not fall under the jurisdiction of a regional Council, but there is coordination with the relevant Council on proposed rule making.

manage, restore or rebuild fish stocks. If there is no estimate of MSY some other agreed biological reference point is used. The distribution and biological characteristics of the stock(s) are considered, including the occurrence of the stock(s) in areas under national jurisdiction and on the high seas.

A range of criteria relating to the status of the qualifying participants are applied, including:

- The interests of artisanal, subsistence and small-scale coastal fishers;
- The needs of the coastal fishing communities which are dependent mainly on fishing for the stocks;
- The needs of the coastal States of the region whose economies are overwhelmingly dependent on the exploitation of living marine resources, including those regulated by ICCAT;
- The socio-economic contribution of the fisheries for stocks regulated by ICCAT to the developing States, especially small island developing States and developing territories from, the region;
- The respective dependence on the stock(s) of the coastal States, and of the other States that fish species regulated by ICCAT;
- The economic and/or social importance of the fishery for qualifying participants whose fishing vessels have habitually participated in the fishery in the Convention area;
- The contribution of the fisheries for the stocks regulated by ICCAT to the national food security/needs, domestic consumption, income resulting from exports, and employment of qualifying participants; and
- The right of qualified participants to engage in fishing on the high seas for the stocks to be allocated

The record of compliance, data submission and scientific research by qualifying participants is also taken into account.

ICCAT requires that the allocation criteria are applied on a stock-by-stock basis in a fair and equitable manner with the goal of ensuring opportunities for all qualifying participants. No qualifying participant shall trade or sell its quota allocation or a part thereof.

Application of these criteria resulted in a baseline U.S. North Atlantic swordfish quota of 3,907mt for the period 2004 - 2006. The fraction of the overall quota allocated to the U.S. has increased over time, because since 1997 the U.S. landed less than its ICCAT-recommended “baseline” and “adjusted” swordfish quota. Based on reported landings to ICCAT, the U.S. went from exceeding its “baseline” quota in 1996 to landing only 29% of its “adjusted” quota in 2005. The reported catch in 2005 was 2,424mt, compared to a 2005 “adjusted” quota of 8,319mt.

#### **Permit limitation in the U.S. swordfish fishery**

The U.S. Government has eliminated loan programs that previously led to government-funded overcapitalization of fisheries. The federal system now incorporates gear and license (permit) limitations to rationalize fishing effort and restrictions on vessel upgrading within the swordfish fishery (see Section 3.2.3). The number of permits in various categories are shown in Table 0.

Table 30 Number of Directed Swordfish, Incidental Swordfish, Swordfish Handgear, Charter/Headboat, HMS Angling, and Swordfish Dealer Permits, 2005-2011. Source: NMFS 2011a.

Type of Permit	2005	2006	2007	2008	2009	2010	2011
<b>Directed Swordfish</b>	190	191	180	181	187	177	178
<b>Incidental Swordfish</b>	91	86	79	76	72	72	67

Type of Permit	2005	2006	2007	2008	2009	2010	2011
<b>Swordfish Handgear</b>	92	88	82	81	81	75	78
<b>Charter/Headboat</b>	3,963	4,173	3,899	4,297	4,150	4,174	4,194
<b>HMS Angling</b>	24,127	25,238	24,220	26,933	25,506	24,479	23,138
<b>Swordfish Dealer</b>	294	285	269	171	177	181	191
<b>Total</b>	28,757	30,061	28,729	31,739	30,173	29,158	27,846

### 3.5.5 Compliance and Enforcement

ICCAT has no enforcement capacity of its own. Like other RFMOs, it relies on its Contracting Parties to implement management measures domestically, through suitable harvest control tools that will allow the stated objectives for the management of the overall fishery to be met. Through Article IX of the Convention, the Contracting Parties to the ICCAT have agreed to take all action necessary to ensure the enforcement of the Convention, and undertaken to collaborate with each other with a view to the adoption of suitable effective measures to ensure the application of its provisions, including in particular to set up “*a system of international enforcement*” to be applied to the Convention Area except the areas under coastal States’ national jurisdiction.

As described above, the conservation measures (recommendations) agreed by ICCAT take many forms, including overall TACs, country specific quotas, CPC allocations by various fleet sectors, effort restrictions per CPC group, time/ area closures to protect spawning or nursery populations, and minimum size restrictions to protect juvenile fish.

ICCAT has agreed a number of compliance related measures for specific fisheries, including:

- IUU fishing vessel listing (<http://www.iccat.int/en/IUU.asp>; contains 38 vessels currently; 7 flagged to Indonesia, one of each to Bolivia, the Republic of Guinea, Colombia and Georgia and the remainder of unknown flag);
- port state measures;
- a Statistical Document Program (SDP) covering a number of species, including swordfish;
- observers on transshipment vessels and in the Mediterranean bluefin tuna fishery;
- a scheme for boarding and inspection of vessels on the high seas (applicable to stateless vessels); and
- compulsory application of a Vessel Monitoring System (VMS) for all commercial vessels exceeding 20 meters between perpendiculars or 24 meters length overall (implemented through the CPCs).

ICCAT has a Compliance Committee with the function of reviewing the implementation of ICCAT conservation and management measures and domestic measures taken to support this implementation. The terms of reference further require the Committee to review the port inspection programs and other programs and activities domestically that are focused on identifying problems with noncompliance.

The 2008 Performance Review (Hurry et al (2008) recommended that ICCAT review immediately the adequacy and effectiveness of its MCS and enforcement measures with a view to adopting measures for further strengthening them, including a regional on-board observer program and boarding and inspection scheme. While concluding that the concept of a Compliance Committee and the terms of reference were sound, the review stated that main problem lies in the poor adherence by Contracting Parties to the rules and recommendations made by the Commission. Since the review

ICCAT has continued to adopt measures intended to improve compliance by CPCs, including in 2011 the Recommendation by ICCAT on Penalties Applicable in Case of Non Fulfillment of Reporting Obligations (Recommendation 11-15).

U.S. Atlantic enforcement for ICCAT species is undertaken by the NOAA Office of Law Enforcement (OLE), the U.S. Coast Guard, and, pursuant to cooperative enforcement agreements, by States and territories with maritime boundaries in the Atlantic Ocean, Gulf of Mexico, and/or Caribbean Sea. Enforcement activities include monitoring and inspecting offloads at landing facilities and marinas in conjunction with dealer record checks and at-sea boarding and inspection. NOAA also visits a limited number of concerned recreational marinas. There are quarterly meetings of the HMS Enforcement Working Group involving NOAA Enforcement, the US Coastguard and participants from state enforcement agencies when appropriate. The agenda for these meetings includes compliance levels, strategies for changing regulations and inter-agency cooperation.

Available sanctions for violations of the regulations are specified under the MSFCMA (16 USC 1858) and include withdrawal of permit, forfeiture of catch and vessel and monetary penalties. The maximum monetary penalty is adjusted periodically for inflation and has stood at \$140,000 since 2008. There have been very few cases in the swordfish fishery, hence it is difficult to say whether sanctions have been applied consistently. One of the few recent examples is a fine of \$5,500 and a 30 day permit suspension at the end of 2009 levied for an expired permit and improper gear markings.

Most cases of violations with respect to HMS relate to dealer reporting and not the fishery itself. From 1 October 2009 to 30 September 2010, the Coast Guard boarded 200 vessels in fisheries talking ICCAT species, resulting in the detection of 4 significant violations. Over this period, the total Coast Guard Atlantic Ocean and Gulf of Mexico fisheries enforcement focused effort involved 2,502 aircraft patrol hours, 8,020 boat patrol hours, and 48,150 cutter (large vessel) patrol hours. In addition, states and territories of the United States with maritime boundaries relevant to ICCAT species enforcement on the Atlantic Ocean, Gulf of Mexico, and/or Caribbean Sea maintain a total of more than 1,400 officers dedicated to marine conservation law enforcement and reported 9,022 staff hours of focused enforcement of regulations for tuna and tuna-like species.

The U.S. manages the domestic commercial swordfish fishery using a limited access permit system (Section 3.5.4). In order to ensure compliance among fishermen participating in the pelagic longline and handgear buoy swordfish fishery, various programs, including fishing logbooks, observers (longline only), port sampling, trip interviews and VMS, are used to track landings and bycatch and to ensure compliance with federal regulations. Data on commercial catches and landings of North Atlantic swordfish are captured through observer programs, logbook reports, and dealer reports.

Longline vessels must carry observers in Federal waters if selected. Target coverage amounts to about 8% of the vessel trips. Contacts in the NOAA Office of Law Enforcement indicated that the level of compliance with the requirements of the observer program was high – of the order of 90%. Fishermen with a commercial swordfish permit must report fishing activities in an approved logbook within 48 hours of each day's fishing activities, or before offloading for one-day trips, whichever is sooner, and submit the logbook within 7 days of offloading. The logbook provides information on landings, bycatch and interactions with marine mammals and sea turtles in a timely manner. Logbook reports must include weighout slips showing the dealer to whom the fish were transferred, the date they were transferred, and the carcass weight of each fish for which individual weights are normally recorded. For fish that are not individually weighed, a weighout slip must record total weights by species and market category. NMFS requires the submission of a "No Fishing" reporting form if no trips occurred during the preceding month. (NMFS Commercial Compliance Guide). Federally permitted dealers are required to submit bi-weekly reports when they receive Atlantic swordfish from a vessel.

Recreational landings of North Atlantic swordfish are captured through mandatory tournament reports (if a tournament is selected for reporting), mandatory self-reporting of non-tournament landings, and various surveys, including the Marine Recreational Fisheries Statistics Survey and the Large Pelagics Survey.

Table provides a summary list of NOAA enforcement actions taken in respect of ICCAT requirements. Violations detected by enforcement officials with respect to ICCAT species over the period 2008 to 2010 are provided in Table 29.

Table 31 Summary of US Regulations in respect of ICCAT requirements

ICCAT requirement	Relevant US regulations
VMS	VMS is required on all pelagic longline vessels fishing for Atlantic highly migratory species regardless of size.
ICCAT requires reporting of (i) total catch in number, nominal weight, or both, by species (both target and non-target) as is appropriate to each fishery period, (ii) discard statistics, including estimates where necessary, (iii) effort statistics appropriate to each fishing method, and (iv) fishing location, date and time fished and other statistics on fishing operations.	All US commercial vessels utilizing commercial pelagic longline and bottom longline for Atlantic HMS must report catch and effort data NMFS selects. Logbooks capture catches in numbers of retained and discarded target species, weights, bycatch statistics by species, effort statistics appropriate to gear type by set, as well as temporal and spatial data. Additionally, mandatory observer coverage in certain portions of the fishery collect the above as well as additional information.
ICCAT requires reporting and other conditions for transshipping, where transshipping is permitted. All LSFVs involved in transshipment at sea must have a prior authorization to transship issued by the CPC.	Transshipment of HMS is prohibited by US regulations.
Observer coverage	Mandatory observer coverage requirements are triggered by gear type rather than vessel size. Pelagic and bottom longline and gillnet vessels fishing for Atlantic highly migratory species are selected to achieve a coverage goal of at least 8% of sets. Elevated levels of observer coverage are imposed in certain times and locations.
ICCAT requires vessels to have a unique, internationally recognized identification number, that enables it to be identified regardless of changes in registration or name over time.	In the US, Applicants for HMS permits are requested to provide an International Maritime Office (IMO) or hull number, however, this is not a prerequisite for obtaining an HMS permit. Often vessels provide a U.S. Coast Guard documentation number or a State registration number.
ICCAT requires the name of natural or legal person authorized to fish	US Permits for Atlantic highly migratory species are issued to the vessel owner for a specific vessel, which authorizes all individuals on board to fish. Individuals other than the vessel owner named on the permit may fish onboard the vessel, so long as it is covered by a valid permit.
Other applicable ICCAT management measures (e.g., closed area/seasons, minimum sizes)	These measures include but are not limited to minimum sizes, species prohibitions, closed areas/seasons, hook and bait restrictions, bycatch disentanglement and release equipment, training, and certification requirements, other bycatch minimization regulations, landing form restrictions, and a requirement



ICCAT requirement	Relevant US regulations
	to sell to only permitted dealers
ICCAT requires that vessels which have not complied with ICCAT regulations are subject to sanction by the flag CPC.	Multiple Federal and State agencies in the US are authorized to enforce applicable regulations and levy penalties according to applicable U.S. statutes.

Table 29 Violations detected by enforcement officials with respect to ICCAT species 2008-2011 (source: NOAA annual reports to ICCAT, 2008-2011)

	Number of cases			
	2008	2009	2010	2011
<b>Enforcement Actions</b>				
Cases opened this reporting period	115	77	42	48
Cases remaining open	76			34
Cases completed	39			
Cases referred for prosecution		58	25	
Cases completed with warnings issued	28	19	17	14
<b>Violation</b>				
General Requirements of the Atlantic Tunas Convention Act (ATCA) and Magnuson-Stevens Act (MSFCMA)	14	15	1	3
<b>General Prohibitions under the ATCA and MSFCMA to include:</b>				
Falsify information required on an application for permit	2		1	
Fishing, catching, possessing, retaining Atlantic Highly Migratory Species without a valid permit	14	15	11	11
Purchase, receipt, transfer, or attempts to do so, for commercial purposes, Atlantic HMS landed by non-permitted vessels, or without a valid dealer permit	3	2		1
Sale, transfer or attempted sale or transfer of Atlantic tuna, shark or swordfish to other than a permitted dealer	2	4		
Fail to possess a permit on board the permitted vessel or upon transfer of HMS to a dealer, or dealer permit		1		1
Falsify or fail to report or maintain required information pursuant to a display, research, or chartering permit	8	6	5	7
Falsification or failure to display and maintain vessel and gear Identification as specified	1			
Failure to comply with at-sea observer coverage requirements	2	4		5
Fail to install, activate, repair or replace a VMS unit prior to leaving port	2	1		2
Tamper with, or fail to operate and maintain a vessel monitoring system	2	1		
Utilizing secondary gears to capture or attempt to capture any 1 undersized or free swimming Atlantic HMS, or failing to release a captured Atlantic HMS				1
Failure to maintain an Atlantic HMS in the form specified	7	2	2	1
Fish for, catch, retain or possess an Atlantic HMS at less than its specified minimum size limit	13	8	6	2
Fail to comply with the restrictions on use of pelagic longline, bottom longline, gillnet, buoy gear, spear gun gear, or green-stick				1

	Number of cases			
	2008	2009	2010	2011
gear				
Disposal of fish in any manner after approach by or communication from an authorized officer	1			
Assaulting, interfering, or obstructing any authorized officer in the conduct of any search, inspection, seizure or investigation		1	1	1
Assault, interfere with, obstruct, delay or prevent NMFS personnel or anyone officially collecting information on behalf of NMFS				2
Land, transship, transport, purchase, sell, offer for sale, import, export, or have in custody possession or control any fish regulated pursuant to a recommendation of ICCAT that was harvested, retained, or possessed in a manner contrary to the regulations of another country	5			1
Deploy or fish with any fishing gear from a vessel or anchor a fishing vessel required to be permitted, in any closed area	1	1		
Deploy or fish pelagic longline with live bait affixed to the hooks or use a live bait well in the Gulf of Mexico	6			
Utilizing secondary gears to capture or attempt to capture any undersized or free swimming Atlantic HMS, or failing to release a captured Atlantic HMS			1	
Failure to carry required sea turtle bycatch mitigation gear	6	2		
Fish with bottom or pelagic longline and shark gillnet gear while failing to adhere to gear operation or deployment restrictions	1			
Fish without being certified for completion of a NMFS protected species safe handling, release, and identification workshop	1			
Fish without having a valid protected species workshop certificate issued to the vessel owner and operator on board the vessel as required	1			
Fail to comply with the restrictions on use of pelagic longline, bottom longline, gillnet, buoy gear, spear gun gear, or green-stick gear			1	
Violate the Magnuson-Stevens Act, ATCA, or any regulation or permits issued under the Magnuson-Stevens Act or ATCA			1	
<b>Specific Prohibitions for Atlantic Tunas:</b>				
Fish for, retain, possess, or land a BFT when the fishery is closed	1			
Fail to comply with the restrictions on sale and purchase of Atlantic tuna	1			
Exceeding the catch limit for BFT as specified for the appropriate permit category	1		2	
Refusal to provide information requested by NMFS personnel, or collected on the behalf of NMFS	1			
Fish under an Atlantic Tunas or HMS permit and receive unauthorized Transiting, landing or control assistance from another vessel		1		
An Atlantic HMS Angling or Atlantic HMS Charter operator who fails to report a BFT		1		
Fish for, catch, retain, or possess a BFT less than the large medium size class without a valid HMS Angling or Charter/Headboat permit			2	1
<b>Specific Prohibitions for Billfish:</b>				
Retain a billfish harvested by gear other than rod and reel, or retain a billfish without a valid angling or Charter/Headboat permit	1			

	Number of cases			
	2008	2009	2010	2011
Fail to maintain a billfish in the form specified	2	1		
Unauthorized sale or purchase of a billfish	2			
Fail to report a billfish as specified (vessel owner)	1			
Unauthorized transfer of billfish at sea			1	
<b>Specific Prohibitions for Sharks:</b>				
Exceeding a recreational retention limit for shark	7	1		1
Exceed a commercial retention limit for shark				1
Failure to maintain a shark in its proper form	1	6	5	6
Sale or purchase of shark fins that are disproportionate to the weight of shark carcasses	1	1	1	
Retention, possession, take, purchase or sale of a prohibited shark	1	2		
Fish for Atlantic Sharks with unauthorized gear or possessing unauthorized gear aboard a vessel while fishing for Atlantic sharks		1		
<b>Specific Prohibitions for Swordfish</b>				
Purchase or trade swordfish without a dealer permit	1			
Prohibited transfer of swordfish at sea	1			
Fail to comply with the restrictions on the sale and purchase of swordfish	1			
Fail to mark each buoy gear as required			1	

### 3.5.6 Research Plan

ICCAT conducts periodic stock assessments of tunas and tuna like species through its Standing Committee on Research and Statistics (SCRS). These assessments underpin the scientific advice for management that is provided to the Commission. ICCAT assessments aim at evaluating the sustainability of current and proposed future harvest practices in light of the Commission's objective to maintain the populations at a level that permits their maximum sustainable catch. The current schedule of assessments posted on the ICCAT web site is provided in Table 303. Assessments can be undertaken more frequently when there is reason to be concerned for changes in stock status for example if negative indicators arise from the fisheries.

Table 303 ICCAT Schedule of stock assessments<sup>41</sup>

SPECIES		Stock	Last / Next assessment
Yellowfin Tuna	<i>Thunnus albacares</i>		2011 / 2015?
Bigeye Tuna	<i>Thunnus obesus</i>		2010 / 2014?
Skipjack Tuna	<i>Katsuwonus pelamis</i>		2008 / 2012?
Albacore	<i>Thunnus alalunga</i>	N Atlantic	2009 / 2013?
Albacore	<i>Thunnus alalunga</i>	S Atlantic	2011/2013?
Albacore	<i>Thunnus alalunga</i>	Mediterranean	2011/2015?
Bluefin Tuna	<i>Thunnus thynnus t.</i>	Atlantic	2010/2012
Southern Bluefin Tuna	<i>Thunnus maccoyii</i>		N/A (CCSBT)
Swordfish	<i>Xiphias gladius</i>	Atlantic	2009/2013
Swordfish	<i>Xiphias gladius</i>	Mediterranean	2010/2014?

<sup>41</sup> <http://iccat.int/en/assess.htm>

SPECIES		Stock	Last / Next assessment
Sailfish	<i>Istiophorus albicans</i>		2009/2013?
Blue Marlin	<i>Makaira nigricans</i>		2011/2015?
White Marlin	<i>Tetrapturus albidus</i>		2006/2012?
Small Tunas	(various)		N/A
Pelagic sharks	<i>Prionace glauca</i>		2008 /2012?
	<i>Isurus oxyrinchus</i>		2008 /2012?
	<i>Lamna nasus</i>		2009/??

The last assessment for Atlantic swordfish was conducted in 2009 (SCRS/2009/016<sup>42</sup>). The next assessment is expected to take place in 2013. In the meantime, the Swordfish Species Group of the SCRS meets annually to assess any new information, update the SWO Executive Summaries and develop the workplan for the following year.

The 2010 annual report of the SCRS<sup>43</sup> listed a series of priority actions for North and South Atlantic swordfish in 2011 based on recommendations from the Report of the 2009 Swordfish Stock Assessment Session (below). In addition the Swordfish Species Groups (Atlantic North and South and Mediterranean) are developing a research plan to address key data deficiencies associated with the stock assessments, and to investigate new stock assessment methodologies.

**Data Preparatory and Methods Meeting.** A working session of five days duration to be convened prior to the next assessment to allow the Group time to explore new stock assessment approaches and to assemble the data in advance

**Catch data.** All countries catching swordfish (directed or by-catch) should report catch, catch-at-size (by sex) and effort statistics by as small an area as possible, and by month. These data must be reported by the ICCAT deadlines, even when no analytical stock assessment is scheduled. Historical data should also be provided.

**CPUE Series.** Inter-session meetings to deal with the standardization of CPUE series and processing of data.

**Assignment of ages.** Updating of computer codes used for ageing swordfish in the Atlantic. New sex-specific growth curves should be incorporated, and their impact in terms of the catch-at-age estimation, and consistency with the tagging data should be evaluated before a new set of growth curves is formally adopted by the Group.

**Discards.** Information on the number of undersized fish caught, and the numbers discarded dead and released alive should be reported so that the effect of discarding and releasing can be fully included in the stock assessment. Observer sampling should be sufficient to quantify discarding in all months and areas in both the swordfish directed fisheries and the tuna fisheries that take swordfish as by-catch. Studies should be conducted to improve estimation of discards and to identify methods that would reduce discard mortality of swordfish. Studies should also be conducted to estimate the subsequent mortality of swordfish discarded alive; these are particularly important given the level of discarding due to the minimum size regulatory recommendation.

**Target species.** All fleets should record detailed information on log records to quantify which species or species group is being targeted. Compilation of detailed gear characteristics and fishing strategy information (including time of set) are very strongly recommended in order to improve CPUE standardization.

<sup>42</sup> [http://www.iccat.int/Documents/Meetings/Docs/2009\\_SWO\\_ASSESS\\_ENG.pdf](http://www.iccat.int/Documents/Meetings/Docs/2009_SWO_ASSESS_ENG.pdf)

<sup>43</sup> [http://www.iccat.int/Documents/SCRS/ExecSum/SWO-ATL\\_EN.pdf](http://www.iccat.int/Documents/SCRS/ExecSum/SWO-ATL_EN.pdf)

**Recruitment Indices.** The Group's ability to forecast stock status within the VPA is contingent on the availability of reliable indices of abundance at the youngest ages. For example, age-1 indices of abundance are only available up to 2001. Countries that have traditionally provided such indices should update their time series, as a matter of high priority.

The 2011 Swordfish Species Group reviewed new information from Canada, which provided updated age and sex-specific nominal catch rate series for its pelagic longline fishery for the period from 2002 to 2011. The trend in CPUE indicates that relative abundance has continued to increase since the series low in 2006 and is near the historical high observed in 1990. Reports from the USA also indicate relatively high recent catch rates, and increasing average size of fish in the catch.

In 2011 The SCRS reviewed an updated framework model for evaluation of biomass based limit reference points for the north Atlantic swordfish stock. The SCRS recommended further evaluation of biomass based reference limit points, to include alternative stock-recruitment hypothesis, and different selectivity patterns. The SCRS plans to continue with this work towards identifying and testing of a limit reference point prior to the next assessment (proposed for 2013).

ICCAT also has a series of Special Research Programs listed on its web site (Table 314). Special Research Programs are used by ICCAT as a mechanism to help focus, coordinate and complement national research activities. The programs usually center on improving biological knowledge and fishery data for a particular species, and usually last a few years. In some cases they are funded by the Commission as part of the regular budget and in some cases they are funded by contributions from individual Contracting Parties and other agencies.

Table 314 ICCAT Special Research Programs (as of 28 November 2011)

<http://www.iccat.es/en/ResProgs.htm>

Title	Duration	Objective
Atlantic Wide Research Programme for Bluefin tuna (GBYP) <a href="http://www.iccat.int/GBYP/en">http://www.iccat.int/GBYP/en</a>	Five years programme started in 2010. Funded by ICCAT CPCs (European Union (80%), Canada, Croatia, Japan, Norway, Turkey, United States and Chinese Taipei).	To improve understanding of key biological and ecological processes. To improve basic data collection (including information from farms, observers, and VMS). To improve assessment models and provision of scientific advice on stock status through improved modelling of key biological processes (including growth and stock-recruitment), further developing stock assessment models including mixing between various areas, and developing and use of biologically realistic operating models for more rigorous management option testing.
Bluefin Year Program (BYP)	1992-1997 through informal coordination of national research activities. 1997-present as part of Commission's budget.	To improve general biological information and statistical fisheries data on bluefin tuna. Currently, the Commission is considering the possibility of a larger research program which would incorporate the BYP. The increased level of funding would be necessary to answer questions related to BFT mixing in the Atlantic.
Enhanced Program for Billfish Research	1987-present with funding from the Commission and other donors	To obtain more complete detailed catch and effort statistics for billfishes, to carry out an expanded tagging program, and to carry out studies on age and growth.
Bigeye Tuna Year Program (BETYP)	1999-2004 with funding from EC, Japan and other donors	To determine if the (mid-1990s) level of catches is sustainable through research (primarily tagging) and improved statistics.
Albacore Research Program (ARP)	1990-1994 with funding from the Commission	Improved understanding of the state of albacore stocks in the Atlantic through the compilation of more coherent datasets and research on population dynamics and environmental influences.
Yellowfin Year Program (YYP)	1986-1987 with funding from the Commission	To deepen our understanding of yellowfin population dynamics, taking advantage of a quick transition from a high-effort to a low-effort state.

Title	Duration	Objective
International Skipjack Year Program (ISYP)	1979-1982 with funding from several Contracting Parties	To determine if skipjack catches could be increased in a sustainable manner

The US conducts research on swordfish to contribute to ICCAT's fishery assessment efforts at ICCAT. Four NOAA research scientists participated in the 2009 ICCAT Atlantic Swordfish Stock Assessment Session (in addition to the Chair of the SCRS being a NOAA scientist and six others attending the SCRS meeting) and the US contributed three papers on swordfish to that meeting:

- SCRS/2009/109 Update of standardized catch rates by sex and age for swordfish (*Xiphias gladius*) from the U.S. longline fleet 1981-2008. Ortiz, M.
- SCRS/2009/110 An updated biomass index of abundance for North Atlantic swordfish 1963-2008. Ortiz, M., Mejuto, J., Paul, S., Yokawa, K. and Neves, M.
- SCRS/2009/111 Inferring population admixture in Atlantic swordfish (*Xiphias gladius*) using Bayesian clustering of multiple nuclear dna markers. Smith, B. and Alvarado Bremer, J.

The US has also conducted a series of research actions to address specific domestic management issues in the swordfish fishery. These include experimental fishing using circle hooks to reduce sea turtle bycatch and experimental fishing in closed FEC area. In 2010, Scientists from Nova Southeastern University completed a two-year study of the commercial buoy-gear, to determine the rates of bycatch and lethal hook sets. Observers were deployed on fishing trips in the Florida Straits between 2007 and 2009 and recorded data on catch, discards, depth, water temperature and catch per unit effort. Researchers at the Molecular Ecology and Fisheries Genetics Laboratory of Texas A&M University at Galveston continue to examine the population structure of Atlantic swordfish, with an emphasis on characterizing allele frequencies of nuclear genes to quantify admixture within the Atlantic Ocean and its adjacent basins.<sup>44</sup> The US has also undertaken collaborative research with Canada using pop-up satellite archival tags (PSAT) to investigate stock structure and feeding site fidelity (ICCAT Paper SCRS/2009/115).

The US has supported research that has contributed to the ICCAT Bluefin Year Program (Table 314), concentrating on ichthyoplankton sampling, growth and reproductive biology, methods to evaluate hypotheses about mixing and movement patterns, spawning area fidelity, stock structure investigations and population modeling analyses.

Both the General Coordinator and West Atlantic coordinator of the Enhanced Research Program for Billfish (IERPBF) are from the US. The IERPBF started with the following specific objectives: (1) to provide more detailed catch and effort statistics, particularly for size frequency data; (2) to initiate the ICCAT tagging program for billfish; and (3) to assist in collecting data for age and growth studies. More recently the IERPBF has expanded its objectives to evaluate habitat use of adult billfish, study billfish spawning patterns and billfish population genetics<sup>45</sup>. The highest priorities for 2011 are to support the improvement of data on the genetic identification of white marlin in the historical catches of white marlin and to continue improving the statistics of artisanal fisheries Atlantic-wide. A significant contributor to the IERPBF, NMFS has an Atlantic Billfish Research Plan that is implemented by the Migratory Fishery Biology Branch of NMFS South East Fisheries Science Center. This plan actively addresses research needs to reduce the uncertainties of stock assessments, improve the biological basis for management, and enhance the rebuilding of Atlantic billfish stocks. Branch staff participate in ICCAT's Atlantic billfish assessment activities and coordinate the ICCAT Enhanced Research Program for billfish in the Western Atlantic Ocean. Specific research programs include monitoring billfish tournament catch and effort, assessing movement, migration and reproductive patterns in terms of essential fish habitat, assessing hook performance of certain

<sup>44</sup> 2010 Annual Report of the USA To ICCAT, ANN-045/2010

<sup>45</sup> [http://www.iccat.int/Documents/SCRS/ExecSum/ERPBF\\_EN.pdf](http://www.iccat.int/Documents/SCRS/ExecSum/ERPBF_EN.pdf)

terminal gear (e.g. circle hooks), and conducting a variety of studies on the life history of Atlantic billfish. Scientists maintain an Atlantic-wide constituent-based cooperative tagging program (Cooperative Tagging Center), as well as conduct electronic tagging of billfish using PSAT technology. The Cooperative Tagging Center works in collaboration with The Billfish Foundation, through a memorandum of understanding, to enhance billfish tagging efforts in the Atlantic Ocean and elsewhere. In recent years, the Branch has expanded research programs with the goal of minimizing billfish by-catch in offshore longline fleets targeting tunas and swordfish. Branch staff have also collaborated with other groups to conduct research on electronic tagging of Atlantic bluefin tuna.<sup>46</sup>

### 3.5.7 Monitoring and management performance evaluation

#### ICCAT

In response to concerns raised by the international community about the sustainable management of high seas fisheries, including where RFMOs exist, Food and Agriculture Organisation of the United Nations (FAO) Committee on Fisheries (COFI) in 2005 developed plans for independent reviews of all RFMOs. These plans were further developed at the Kobe Joint Meeting of Tuna RFMOs in 2007.

ICCAT duly appointed an independent panel consisting of three renowned international fisheries experts to undertake the review, which was completed in 2008. The TOR were sufficient to allow the Review Panel to make a broad review of ICCAT's performance against its objectives. The Review Panel's report reviews the Basic Texts, the status of the stocks and the scientific process, the development and application of conservation and management measures. It also presents a series of recommendations intended to strengthen the mandate of ICCAT and improve its performance. ICCAT's response to the findings of the review and its recommendations is currently on-going. In late 2009, ICCAT convened a special Working Group on the Future of ICCAT<sup>47</sup> with participation from 12 CPCs, including eight delegates from the US (including the SCRS chair). The Working Group has met subsequently in 2011<sup>48</sup> and 2012<sup>49</sup> (See also Section 3.5.1).

The agenda for the first meeting of the Working Group included a review of the ICCAT Convention, including its decision making process and structure, considering in particular:

- a) Developments in international law since the Convention's signature (1966), including conventions, recommendations and resolutions of other Regional Fisheries Management Organizations;
- b) Issues arising from the Joint Tuna RFMO meetings;
- c) ICCAT Performance Review;

and consideration of other actions needed for the strengthening of ICCAT.

The Working Group prepared the following list of priority issues identified in the review of the ICCAT Convention:

- Precautionary Approach
- Ecosystem considerations, including by-catch
- Contribution scheme
- Provisions to strengthen participation of non-Parties to the Convention
- Decision-making processes:

<sup>46</sup> <http://www.sefsc.noaa.gov/fisheriesbiology.jsp>

<sup>47</sup> [http://www.iccat.int/Documents/Meetings/Docs/2009\\_FUTURE\\_ICCAT\\_ENG.pdf](http://www.iccat.int/Documents/Meetings/Docs/2009_FUTURE_ICCAT_ENG.pdf)

<sup>48</sup> <http://www.atlafco.org/Docs/11028201151450PM.pdf>

<sup>49</sup> [http://www.iccat.int/Documents/Meetings/Docs/2012\\_FIWG\\_REP\\_ENG.pdf](http://www.iccat.int/Documents/Meetings/Docs/2012_FIWG_REP_ENG.pdf)

- Timing of entry into force of recommendations
- Voting rules
- Objection procedures
- Dispute settlement procedures
- Capacity-building and assistance to developing States

The third, and most recent meeting discussed appropriate next steps to address issues identified by CPCs following the earlier meetings. These issues were (from the meeting agenda):

- a. Precautionary Approach
- b. Ecosystem considerations, including bycatch
- c. Convention scope, in particular sharks conservation and management
- d. Contribution scheme
- e. Capacity building and assistance
- f. Non-party participation
- g. Strengthening the SCRS
- h. Decision making processes and procedures
  - i. Entry into force provisions for recommendations
  - ii. Voting rules/quorum
  - iii. Objection procedures
  - iv. Dispute resolution
- i. Procedural issues
  - i. Transparency
  - ii. Allocation of fishing possibilities
  - iii. Panel structure
  - iv. Streamlining / simplifying conservation measures
  - v. Election of chairs
- j. Other issues to strengthen the Commission
  - i) Monitoring, Control and Surveillance (MCS)

## Federal

The National Standard (NS) 2 guidelines (50 CFR 600.315) require the National Marine Fisheries Service (NMFS) to prepare a Stock Assessment and Fishery Evaluation (SAFE) Report, or similar document, review it annually, and make changes as necessary for each fishery management plan (FMP). The 2011 SAFE report for Atlantic HMS is downloadable from the web site of the NOAA office of Sustainable Fisheries.<sup>50</sup>

SAFE Reports provide a summary of the best available scientific information on the condition of HMS stocks, marine ecosystems, and fisheries managed under Federal regulation. They also provide updated information regarding the economic status of HMS fisheries, fishing communities, and industries, as well as the socio-economic and environmental impacts of recently implemented regulations. This information evaluates the effectiveness of federal and state Atlantic HMS management programs, and provides a basis for future management decisions. The HMS FMP is periodically updated through amendments as new data and information becomes available or as new goals or objectives are defined.

NMFS' scientific input into the stock assessment and management of Atlantic HMS, including swordfish, is submitted through the SCRS of ICCAT where it is subject to review by in the region of 90 participant scientists from 19 (excluding those from the US) CPCs<sup>51</sup> (including member countries of the EU). Proposals made by the US for management measures on these species are subject to the same level of scrutiny. This is reported annually in a report to the Commission.

<sup>50</sup> [http://www.nmfs.noaa.gov/sfa/hms/Safe\\_Report/2011/SAFE%20Report\\_FINAL\\_122011.pdf](http://www.nmfs.noaa.gov/sfa/hms/Safe_Report/2011/SAFE%20Report_FINAL_122011.pdf)

<sup>51</sup> The 2011 meeting of the SCRS was attended by 99 participants from 19 CPCs (including the US)



NOAA also submits to ICCAT an annual report on its performance with respect to the requirements of ICCAT. These reports are a statutory requirement of ICCAT with a specific format stipulated in ICCAT's Revised Guidelines for the Preparation of Annual Reports. The reports contain specific, separate sections on fisheries, research, management and inspection activities. The main report sections should be:

- Part I (Information on fisheries, research and statistics)
  - *Section 1: Annual Fisheries Information*
  - *Section 2: Research and Statistics*
- Part II (Management implementation)
  - *Section 3: Implementation of ICCAT Conservation and Management Measures*
  - *Section 4: Inspection Schemes and Activities*
  - *Section 5: Other Activities*

The US reports submitted in 2008, 2009, 2010 and 2011 conform to these requirements.<sup>52</sup>

## 4 Evaluation Procedure

### 4.1 Harmonised Fishery Assessment

The stock being targeted by the fishery under assessment is the North Atlantic Swordfish (*Xiphias gladius*) which ranges throughout the North Atlantic from near the Equator to Canadian waters and from the shores of North America to those of Europe and North Africa (see discussion under Biology below). It is the status of this stock that is being evaluated under Principle 1 (P1). Many different fisheries target this stock. Three other fisheries currently relevant to MSC are the North Atlantic Swordfish (*Xiphias gladius*) Canadian Harpoon Fishery, certified on June, 18 2010, the Southeast US North Atlantic swordfish, certified in December 2011, and the Northwest Atlantic Canadian Longline Swordfish Fishery, certified in April 2012. These other certifications are important to the fishery under assessment because in regards to Principle 1, it is the stock status that is being evaluated and not the fishery *per se*. This is the same stock that was evaluated for the two Canadian fisheries. Therefore, every effort was made to harmonize the results of P1 evaluations among these assessments to assure consistency where it is warranted. Although the rationales differ, the scores for all PIs under P1 were the same, with the exception of PI 1.2.1 (Harvest Strategy). Under PI 1.2.1, the Northwest Atlantic Canadian Longline Swordfish Fishery was given a score of 90. The Assessment Team gave the U.S. Swordfish Pelagic Longline and Handgear Buoy Line Fishery a score of 85. The justification for this latter score is provided in the main text of the report (Section 3.3.3), and the Scoring Table (Appendix 1).

#### Canadian assessments

The NW Atlantic Canadian Longline Swordfish passed Principle 1 with an average score of 80.6. Conditions were raised for reference points and harvest control rule. The stock status, harvest strategy, information and monitoring and assessment of stocks all met or exceeded a score of 80. The fishery passed Principle 2 with an average score of 82. Conditions were raised for retained species outcome, retained species management, bycatch management, ETP outcome, ETP management, and ETP information. All other Principle 2 indicators met or exceeded a score of 80. The fishery passes Principle 3 with an average score of 81.3. Conditions were raised for long term objectives, decision making process, and research plan. All other Principle 3 indicators met or exceeded a score of 80.

<sup>52</sup> <http://www.nmfs.noaa.gov/sfa/hms/ICCAT/nationalreport11.pdf>

The North Atlantic Harpoon Canadian Swordfish passed Principle 1 with an average score of 80.6. Conditions were raised for reference points and harvest control rule. The stock status, harvest strategy, information and monitoring and assessment of stocks all met or exceeded a score of 80. The fishery passed Principle 2 with an average score of 100. No conditions were raised for Principle 2; all Principle 2 indicators met or exceeded a score of 80. The fishery passed Principle 3 with an average score of 83.6. Conditions were raised for long term objectives and decision making process. All other Principle 3 indicators met or exceeded a score of 80.

### US North Atlantic Swordfish

A separate assessment on the US North Atlantic swordfish stock, the SSLC US North Atlantic swordfish Longline <http://www.msc.org/track-a-fishery/fisheries-search/sslc-us-north-atlantic-swordfish-longline>, is currently underway and will require harmonization with this and the other certified swordfish fisheries.

## 4.2 Previous assessments

### Southeast US longline and Handline Buoy Gear

The Southeast US fishery was certified in December 2011. As a result of the new assessment of the US North Atlantic Swordfish Fishery, the Southeast fishery certification will be subsumed within the larger US North Atlantic certification, if successful. The Southeast US Longline and Handline Buoy Gear Fishery received a variance from the MSC to allow the PCDR for the US North Atlantic Swordfish Fishery to serve as a surveillance report for the currently certified SE swordfish fishery.

The Southeast US fishery passed Principle 1 with an average score of 80. Conditions were raised for reference points and harvest control rule. The stock status, harvest strategy, information and monitoring and assessment of stocks all met or exceeded a score of 80. The fishery passed Principle 2 with an average score of 82. Conditions were raised for bycatch information, ETP outcome, ETP information, and ecosystem information. All other Principle 2 indicators met or exceeded a score of 80. The fishery passes Principle 3 with an average score of 83.8. Conditions were raised for long term objectives, decision making process, and compliance and enforcement. All other Principle 3 indicators met or exceeded a score of 80. The condition for compliance and enforcement was closed before the fishery began using the certification and before any certified swordfish entered the MSC supply chain.

Section 3 of this report updates the management, science, and operations of the North Atlantic Swordfish fishery, so meets the requirements of surveillance for describing changes in the fishery. Annex 2 presents the conditions and client actions to meet the schedule of the milestones for the conditions Southeast US fishery. All conditions are on schedule or partially on schedule, such that the client has made satisfactory progress (Table 325). Conditions partially on schedule must be caught up to schedule by the second annual audit. If the larger US North Atlantic Swordfish fishery receives certification, the Southeast US fishery conditions and client action plan will be subsumed within the North Atlantic Swordfish conditions and action plan.

Table 325 Summary of Previous Assessment Conditions

Condition	Closed? (Y/N)	Justification
1.1.1 Target Species Outcome	N	On schedule
1.2.1 Target Species Harvest Strategy	N	On schedule
2.2.3 Information and Monitoring	N	On schedule
2.3.1 ETP Status	N	On schedule
2.3.3 Information and Monitoring	N	Partially on schedule for first milestone; progress

Condition	Closed? (Y/N)	Justification
		made.
2.5.3 Information and Monitoring	N	Partially on schedule for first milestone; progress made.
3.1.3 Long Term Objectives	N	On schedule
3.2.2 Decision-making Processes	N	On schedule
3.2.3 Compliance and enforcement	Y	Client demonstrated mechanism to assure vessels stay within the area of the certified fishery

### 4.3 Assessment Methodologies

The fishery was assessed under CR version 1.2 using the default assessment tree with no adjustments, reported using the MSC Full Assessment Reporting Template version 1.2.

#### 4.3.1 Principles and Criteria

The MSC's *Principles and Criteria for Sustainable Fishing*, produced through an international consultation process, describe statements against which a fishery may be compared to enable its operators to make a claim that the fish sold on to retailers, processors and consumers comes from **a well-managed and sustainable source**. The certification methodology adopted by the MSC involves the application and interpretation of the Principles and Criteria to the specific fishery undergoing assessment. This is considered necessary, as the precise assessment of a fishery will vary with the nature of the species, capture method used, etc. The Principles and Criteria are presented below:

**Principle 1. A fishery must be conducted in a manner that does not lead to over- fishing or depletion of the exploited populations and, for those populations that are depleted, the fishery must be conducted in a manner that demonstrably leads to their recovery.**

*Intent. The intent of this principle is to ensure that the productive capacities of resources are maintained at high levels and are not sacrificed in favour of short term interests. Thus, exploited populations would be maintained at high levels of abundance designed to retain their productivity, provide margins of safety for error and uncertainty, and restore and retain their capacities for yields over the long term.*

Criterion 1. The fishery shall be conducted at catch levels that continually maintain the high productivity of the target population(s) and associated ecological community relative to its potential productivity.

Criterion 2. Where the exploited populations are depleted, the fisheries will be executed such that recovery and rebuilding is allowed to occur to a specified level consistent with the precautionary approach and the ability of the populations to produce long-term potential yields within a specified time frame.

Criterion 3. Fishing is conducted in a manner that does not alter the age or genetic structure or sex composition to a degree that impairs reproductive capacity.

**Principle 2. Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends.**

*Intent. The intent of this principle is to encourage the management of fisheries from an ecosystem perspective under a system designed to assess and restrain the impacts of the fishery on the ecosystem.*

Criterion 1. The fishery is conducted in a way that maintains natural functional relationships among species and should not lead to trophic cascades or ecosystem state changes.

Criterion 2. The fishery is conducted in a manner that does not threaten biological diversity (at the genetic, species or population levels) and avoids or minimises mortality of, or injuries to, endangered, threatened or protected species.

Criterion 3. Where exploited populations of non-target species are depleted, the fishery will be executed such that recovery and rebuilding is allowed to occur to a specified level within specified time frames, consistent with the precautionary approach and considering the ability of the population to produce long-term potential yields.

**Principle 3. The fishery is subject to an effective management system that respects local, national and international laws and standards and incorporates institutional and operational frameworks that require use of the resource to be responsible and sustainable.**

*Intent. The intent of this principle is to ensure that there is an institutional and operational framework for implementing Principles 1 and 2, appropriate to the size and scale of the fishery.*

Criterion 1. The management system has a clearly defined scope capable of achieving sustainable fisheries in accordance with MSC Principles 1 and 2 and their associated criteria, and includes short and long-term objectives, including those for mitigating ecological impacts of fishing.

Criterion 2. The management system recognizes applicable legislative and institutional responsibilities and coordinates implementation on a regular, integral and explicit basis.

Criterion 3. The management system includes a rational and effective process for acquisition, analysis and incorporation of new scientific, social, cultural, economic and institutional information.

Criterion 4. A comprehensive research program is conducted.

Criterion 5. The management system ensures that there is a high degree of compliance in the fisheries with management measures and directives regarding fishing practices required by the system.

Criterion 6. The performance of the management system is regularly and candidly evaluated in a systematic fashion and the system responds positively to appropriate recommendations for change.

#### 4.3.2 Generic Assessment Tree

The CR version 1.2 contains a default assessment tree for use on all MSC assessments. Each of the MSC's Principles and Criteria for Sustainable Fishing has been integrated into the default structure. Some rearranging of concepts has occurred and some criteria are considered as issues of scope rather than under specific PIs (i.e. destructive fishing practices and controversial unilateral exemptions from international agreements).

The default assessment tree has eliminated much of the duplication and overlap that previously occurred between Principle 3 and Principles 1 and 2. This has been achieved by addressing the MSC Principles in a more holistic way rather than developing separate performance indicators under each Criterion. For example, many of the operational components formerly under Principle 3 (bycatch and discards, habitat impacts), are now addressed solely under Principle 2.

The default assessment tree organises the performance indicators into components that focus upon the outcomes of the fisheries management process and the management strategies implemented that aim to achieve those outcomes. Therefore the Assessment Tree structure is divided into three levels for the purposes of scoring:

- Level 1 – is the **MSC Principle** as described in the MSC's Principles and Criteria for Sustainable Fishing (also referred to as the MSC standard).
- Level 2 – is the **Component**, which is a high level sub-division of the Principle.
- Level 3 – is the **Performance Indicator** which is a further sub-division of the Principle and the point at which scoring of the fishery occurs.

Table 336 lists the components and performance indicators under each Principle in the generic assessment tree.

Table 336 MSC Components and Performance Indicators under each Principle

Principle	Component	Performance Indicator
Principle 1.	Outcomes: The current status of the target stock resource	1.1.1 Stock status
		1.1.2 Reference Points
		1.1.3 Stock recovery and rebuilding
	Harvest Strategy (Management): A precautionary and effective harvest strategy	1.2.1 Performance of harvest strategy
		1.2.2 Harvest control rules and tools
		1.2.3 Information / monitoring
		1.2.4 Assessment of stock status
Principle 2.	Retained species	2.1.1 Outcome Status
		2.1.2 Management strategy
		2.1.3 Information / monitoring
	Bycatch species	2.2.1 Outcome Status
		2.2.2 Management strategy
		2.2.3 Information / monitoring
	ETP species	2.3.1 Outcome Status
		2.3.2 Management strategy
		2.3.3 Information / monitoring
	Habitats	2.4.1 Outcome Status
		2.4.2 Management strategy
		2.4.3 Information / monitoring
	Ecosystem	2.5.1 Outcome Status
		2.5.2 Management strategy
		2.5.3 Information / monitoring
Principle 3	Governance and policy	3.1.1 Legal and/or customary framework
		3.2.1 Consultation, roles and responsibilities
		3.1.3 Long term objectives
		3.1.4 Incentives for sustainable fishing
	Fishery- specific management system	3.2.1 Fishery- specific objectives
		3.2.2 Decision-making processes
		3.2.3 Compliance and enforcement
		3.2.4 Research plan
		3.2.5 Monitoring and management performance evaluation

The following definitions apply with respect to the Components under Principle 2:

- b) Retained species: Species that are retained by the fishery under assessment (usually because they are commercially valuable or because they are required to be retained by management rules).
- c) Bycatch species: Organisms that have been taken incidentally and are not retained (usually because they have no commercial value).

- d) ETP species: Endangered, threatened or protected species are those that are recognised by national legislation and/or binding international agreements (e.g. CITES) to which the jurisdictions controlling the fishery under assessment are party.
- e) Habitats: The habitats within which the fishery operates.
- f) Ecosystem: Broader ecosystem elements such as trophic structure and function, community composition, and biodiversity.

As with earlier assessment trees, the default assessment tree contains scoring guideposts that describe the main thresholds in the scoring system for each performance indicator:

- 100 – defines the upper boundary of the scoring and represents the level of performance on an individual performance indicator that would be expected in a theoretically ‘perfect’ fishery.
- 80 – defines the unconditional pass mark for a performance indicator for that type of fishery. Weighted scores for Criteria under each MSC Principle must average to 80 or higher.
- 60 – defines the minimum, conditional pass mark at the Criterion level for that type of fishery. Any score below 60 represents a performance level that is unsatisfactory.

For each Performance Indicator, the fishery’s characteristics are compared with the requirements of the pre-specified attributes for each of three Scoring Guideposts (60, 80, 100) to establish a score on a scale of 0-100 points. Scoring occurs in increments of 5 points. A performance score of 60 is intended to reflect ‘a pass with condition’, a score of 80 represents ‘pass without condition’, while a 100 score reflects ‘perfect performance.’ For a fishery to be certified it must accomplish three things:

- Achieve a score of 60 or greater for every performance indicator
- Each MSC Principle must achieve a weighted average score of at least 80, or pass without conditions.
- A contractual commitment to performance improvement for each indicator that has a score less than 80.

## 4.4 Evaluation Processes and Techniques

### 4.4.1 Site Visits

Inspections of the fishery and consultations with the client and various stakeholders were conducted to obtain information on the nature of the fishing, and the nature and relationship of management entities. Having been through a previous assessment, the client was already familiar with the details of the assessment and the client-consultant contact approach. In July 2012, the assessment team met in Washington D.C. for a visit with the fishery and for consultations with stakeholders for the North Atlantic Swordfish assessment. The team received only one request from a stakeholder requesting a meeting during the site visit. This visit supplemented the site visit conducted for the certification of the Southeast US Swordfish fishery: the Team was already familiar with landing procedures and record keeping which were demonstrated at the Day Boat Seafood office in Lakeland FL during the assessment of the FEC fishery in 2011. At that time, the team met for two days at the offices of the NMFS Southeast Fisheries Science Center to discuss scientific aspects of the fishery and to discuss and obtain information on Principles 1, 2, and 3. The team received relevant references, data, and personal communication used in writing the report. The team concluded the site visit with two days of public meetings with stakeholders at a hotel meeting room to discuss any aspect of the fishery, with participation by NMFS, the client, and an observer from MSC. The team presented

information about the fishery, and offered an opportunity for stakeholders to ask questions and present information and opinions in topics discussed. The site visit concluded with private meetings with members of two non-governmental organizations. Because interested stakeholders who lived at substantial distance from Miami wished to participate, the team set up a webinar, consisting of a conference call with on-line access to presentations. The team used this information to assure that all key topics received specific analysis in the assessment report; the stakeholder meetings assured that the team had a clear understanding of the issues of importance to stakeholders.

A summary of the 2012 site visit discussions follows:

#### **19 July 2012**

Courtyard Silver Spring Downtown

8506 Fenton Street, Silver Spring, Maryland 20910 USA

9.00am meeting with NMFS staff (see below)

3.00pm Meeting with Marydele Donnelly from the Sea Turtle Conservancy

The list of individuals who attended meetings during consultations or the site visit is provided in Table 34.

Table 347 Participants at meetings during the field inspections.

	Name	Affiliation	Date	Issues	Location
1	Dr. Steve Turner	NMFS SEFSC	June/July 2012	Science information	By phone
	Rachel O'Malley	NMFS International Affairs		International management	Washington DC
	Guillermo Diaz (),	HMS scientist from SEFSC, based at HQ, Silver Spring		Stock status and assessment	Washington DC
	Karyl Brewster-Geisz	NMFS Branch Chief HMS		HMS management	Washington DC
	Kristy Long	NOAA OPR		Protected species and Principle 2 information	Washington DC
	Marydele Donnelly	Sea Turtle Conservancy		Principle 2 information	Washington DC

#### **4.4.2 Consultations**

MRAG consulted with the Highly Migratory Species Division of National Marine Fisheries Service on the role NMFS could play in achieving conditions for the fishery. The MRAG team received information on NMFS policy that precludes supporting specific fisheries or parts of fisheries. However, NMFS does have a clear policy in support of science-based management of fisheries, and the MRAG team received information from NMFS that demonstrates NMFS

MRAG contacted the following stakeholders by email concerning the assessment of North Atlantic U.S. Swordfish Pelagic Longline and Headgear Buoy Line Fishery Assessment: Blue Ocean Institute, David Suzuki Foundation, Capital Strategies Consulting, the Billfish Foundation, Florida Wildlife Federation, Oceana, Pew Environmental Group, National Resource Defense Council, Tag-a Giant, International Game Fish Association, Turtle Island Restoration Network, World Wildlife Fund (US), International Seafood Sustainability Foundation, National Marine Fisheries Service Highly Migratory Species Division, National Marine Fisheries Service Southeast Fishery Science Center, Center for Biological Diversity, Coastal Conservation Association, Food and Water Watch, Whole Foods, Southeast Fishermen's Association, Sea Turtle Conservancy, Dr. David Kerstetter, and swordfish fishermen and dealers in the region. The schedule of contacts is provided in Table 358.

Table 358 Schedule of contacts

Date	Purpose	Media
26 April 2012	Public announcement of assessment	on MSC website, on Intrafish, direct email
26 April 2012	Proposed Assessment Team members	on MSC website
26 April 2012	Assessment Timeline	on MSC website
14 May 2012	Confirm Assessment Team members	on MSC website
22 May 2012	Announcement of draft assessment tree	on MSC website
25 June 2012	Confirm Final Assessment Tree	on MSC website
21 June 2012	Announce site visit	on MSC website; direct email to stakeholders
02 October 2012	Nominate Peer Reviewers	on MSC website; direct email to stakeholders
22 October 2012	Confirmation of Peer Reviewers	on MSC website
15 January 2013	Announcement of PCDR	On MSC website, direct email to stakeholders
	Announcement of Final Report	
	Announcement of Decision	

#### 4.4.3 Evaluation Techniques

MRAG Americas chose an initial announcement in IntraFish to supplement the posting of the announcement on the MSC website. Intrafish has a worldwide distribution and assures access to the announcement by a many people. In addition, MRAG Americas compiled a stakeholder list based on interest expressed during the Southeast US Swordfish assessment and used that list plus any additions to directly notify stakeholders of the process.

The MRAG Americas assessment team met regularly to discuss the background information and the impact of that information on the scoring of each performance indicator. Through consensus, the team evaluated each scoring issue to determine which the fishery achieved, and agreed on a score.

The MRAG Americas assessment team followed the MSC CR that specified that each performance indicator must score 60 or higher and that each principle must have a weighted average of 80 or above.

The MRAG Assessment Team prepared a list of Principle 2 species (Section 3.4) in advance of scoring. The species were assigned to Retained, Bycatch, or ETP as described in Section 3.4.

The RBF was not used for this assessment.

## 5 Traceability

### 5.1 Eligibility Date

#### Target eligibility date

As the swordfish landed in this fishery are primarily fresh and marketed as fresh, the target eligibility date is the date of certification.



## 5.2 Traceability within the Fishery

### Traceability

When the catch has been made, fishermen record information including tonnage, location, and depth caught, fishing methods, record of by-catch, etc., in logbooks while they are still on the vessels. This information is provided to the National Marine Fisheries Service as a requirement of maintaining a permit. All vessels must have a vessel monitoring system (VMS) as specified by the National Marine Fisheries Service. Upon landing of all species, including swordfish, Day Boat Seafood staff members weigh each fish and enter into a database of information that includes species, receipt date and time, location of fishing, weight of fish, vessel, landing location, and a unique lot number for each fish. Therefore, each fish is uniquely identified to assure segregation of all species. No labelling occurs at sea. As swordfish have no inseparable or practicably inseparable species, identification of the swordfish from other species is highly certain. The information in the database is provided to the fisherman, the state of where landing occurs, and the National Marine Fisheries Service as the official record of landing. Upon receipt of the fish, Day Boat Seafood staff members label each fish with a two-part barcode tag that shows the species, weight, vessel, and lot number. One part of the tag remains with the fish through the entire supply chain, and the other gets affixed to the outside of a shipping box (that may contain several individual fish). The barcode allows near instantaneous tracing of each fish at any point in the supply chain. No processing occurs at sea, and no transshipment occurs. Companies receiving swordfish from the certified fishery under a certificate sharing agreement must have landing records sufficient to assure that the fish have come from the fishery.

However, under current procedures, it is possible for a vessel to fish outside the regions specified in the unit of certification but report swordfish as coming from the UoC. This issue was raised in the scoring rationale for PI 3.2.3 (Compliance and Enforcement) of the Southeast US Swordfish assessment. A condition was raised under this PI such that the client must develop a mechanism to assure that fish from outside the FEC do not enter the MSC supply chain (Condition 3.2). The client closed out this condition by requiring all vessels landing swordfish to enter the MSC supply chain to present VMS data to Day Boat Seafood at the time of landing to demonstrate that the vessel did not fish outside of the FEC. Under this assessment, the same requirements would apply to demonstrate that the vessel did not fish outside of the UoC. Fishermen do not process on board other than heading and gutting the fish. Some vessels may freeze at sea, but the requirement to demonstrate fishing only within the Unit of Certification would still apply.

MSC Chain of Custody requirements were checked only as far as swordfish landed to Day Boat Seafood facilities by legally permitted fishing vessels, where the landings can be monitored in accordance with MSC requirements. Under certificate sharing agreed by Day Boat Seafood, vessels and receivers of swordfish caught in the North Atlantic unit of certification may use the certificate and apply the MSC logo if they have a traceability system comparable to that of Day Boat Seafood.

### Points of landing

The limit of identification of landings is those landings at facilities of Day Boat Seafood (or comparable under a certificate sharing agreement), and only those facilities, by vessels permitted by the NMFS HMS Division and fishing only in the regions specified in the UoC. At this time the points of landing consist of the Day Boat facilities at Fort Pierce and Lake Park, Florida. There is a slight risk that vessels reporting fishing in the UoC could fish in other regions. This risk is negated by the VMS procedures described above.

There are no known risk factors after the point of landing that may influence subsequent chain of custody assessments. Chain of custody would begin from the point of sale from a vessel to a Day Boat Seafood facility (or comparable facility under a certificate sharing agreement).

### 5.3 Eligibility to Enter Further Chains of Custody

#### Eligibility to enter chains of custody

Swordfish produced by fishermen with HMS permits fishing within the regions identified in the Unit of Certification using longline or handgear buoy line gear and landing at any Day Boat Seafood facility (or comparable under a certificate sharing agreement) are eligible to enter further chain of custody once the fisherman has demonstrated that the vessel did not fish outside of the regions specified in the UoC. Day Boat Seafood and companies buying from Day Boat Seafood or other approved companies are required to have chain of custody certification for further sale and distribution. Chain of custody begins at the sale of swordfish from the vessel owner to the Day Boat Seafood (or comparable companies under a certificate sharing agreement), or in the case of companies owning the vessel upon offloading the fish and entering the fish into the company tracking system. This certification did not evaluate landing sites other than Day Boat Seafood or subsequent distribution for chain of custody. To use the MSC logo, subsequent links in the distribution chain must enter into a separate chain of custody certification that proves they can track the swordfish product to permitted vessels fishing in the region of the UoC and landing to approved facilities.

### 5.4 Eligibility of Inseparable or Practically Inseparable (IPI) stock(s) to Enter Further Chains of Custody

No IPI stocks occur in this fishery.

## 6 Evaluation Results

### 6.1 Principle Level Scores

Table provides the final scores at the Principle level.

Table 39 Final Principle Scores

Final Principle Scores	
Principle	Score
Principle 1 – Target Species	80
Principle 2 – Ecosystem	81.7
Principle 3 – Management System	88.5

### 6.2 Summary of Scores

The following tables present the scores, with rationale and information sources, for the performance indicators for each Principle and Criterion. A summary of the final scores for each Performance Indicator is given in Table 360.

Table 360 Summary table showing final scores for each Performance Indicator

Prin- ciple	Wt (L1)	Component	Wt (L2)	PI No.	Performance Indicator (PI)	Wt (L3)	Weight in Principle			Score	Contribution to Principle Score					
One	1	Outcome	0.5	1.1.1	Stock status	0.5	0.25	0.333	0.1667	80	20.00	Or				
				1.1.2	Reference points	0.5	0.25	0.333	0.1667	75	18.75					
				1.1.3	Stock rebuilding			0.333	0.1667							
		Management	0.5	1.2.1	Harvest strategy	0.25	0.125			85	10.63					
				1.2.2	Harvest control rules & tools	0.25	0.125			75	9.38					
				1.2.3	Information & monitoring	0.25	0.125			80	10.00					
				1.2.4	Assessment of stock status	0.25	0.125			90	11.25					
		Two	1	Retained species	0.2	2.1.1	Outcome	0.333	0.0667			80	5.33			
						2.1.2	Management	0.333	0.0667			80	5.33			
						2.1.3	Information	0.333	0.0667			80	5.33			
Bycatch species	0.2			2.2.1	Outcome	0.333	0.0667			80	5.33					
				2.2.2	Management	0.333	0.0667			90	6.00					
				2.2.3	Information	0.333	0.0667			75	5.00					
ETP species	0.2			2.3.1	Outcome	0.333	0.0667			75	5.00					
				2.3.2	Management	0.333	0.0667			75	5.00					
				2.3.3	Information	0.333	0.0667			75	5.00					
Habitats	0.2			2.4.1	Outcome	0.333	0.0667			95	6.33					
				2.4.2	Management	0.333	0.0667			95	6.33					
				2.4.3	Information	0.333	0.0667			90	6.00					
Ecosystem	0.2			2.5.1	Outcome	0.333	0.0667			80	5.33					
				2.5.2	Management	0.333	0.0667			80	5.33					
				2.5.3	Information	0.333	0.0667			75	5.00					
Three	1	Governance and policy	0.5	3.1.1	Legal & customary framework	0.25	0.125			90	11.25					
				3.1.2	Consultation, roles & responsibilities	0.25	0.125			90	11.25					
				3.1.3	Long term objectives	0.25	0.125			70	8.75					
				3.1.4	Incentives for sustainable fishing	0.25	0.125			90	11.25					
		Fishery specific management system	0.5	3.2.1	Fishery specific objectives	0.2	0.1			100	10.00					
				3.2.2	Decision making processes	0.2	0.1			95	9.50					
				3.2.3	Compliance & enforcement	0.2	0.1			85	8.50					
				3.2.4	Research plan	0.2	0.1			90	9.00					
				3.2.5	Management performance evaluation	0.2	0.1			90	9.00					
											Overall weighted Principle-level scores		Either	Or		
											Principle 1 - Target species		Stock rebuilding PI not scored		80.0	
													Stock rebuilding PI scored			
											Principle 2 - Ecosystem				81.7	
											Principle 3 - Management				88.5	

**Principle 1** examines the status of the target stock and whether the management system maintains the reproductive capacity within safe and rational limits. Exploited populations should be maintained at levels of abundance sufficient to maintain their productivity and reproductive capacities for yields over the long term, provide margins of safety for error and uncertainty, and restore and rebuild stocks that have become depleted.

The fishery considered for this assessment, North Atlantic swordfish, is assessed by the International Commission for the Conservation of Atlantic Tunas (ICCAT). While two assessment models (Surplus Production Model (SPM) and Virtual Population Analysis (VPA)) are considered by the ICCAT Standing Committee for Research and Statistics (SCRS), only the SPM is used as the primary basis for advice (ICCAT, 2009). It is considered appropriate for the available data and for this purpose. The last assessment conducted on the stock by ICCAT was completed in 2009, with the next scheduled assessment to be conducted in 2013. Due to the highly migratory nature of the species involved stock assessments rely heavily on the commercial data, such as Catch Per Unit of Effort (CPUE), submitted by member nations to the ICCAT Swordfish Species Group annually. The group prepares a full assessment every 3-4 years. The advice is peer reviewed by the ICCAT Standing Committee on Research and Statistics (SCRS), which usually meets in October of every year. Additionally, working group meetings are held within a year on an ad-hoc as needed basis. Usually these are used to prepare data and analyses prior to an assessment meeting.

ICCAT has successfully implemented a rebuilding plan for swordfish; in 2001 biomass (B) had rebuilt to 94% of  $B_{MSY}$ . Further rebuilding was reported in the 2006 ICCAT stock assessment for swordfish, at which time it was estimated that biomass was at 99% of the biomass needed for Maximum Sustainable Yield (MSY). The 2009 stock assessment states that biomass is at or above  $B_{MSY}$  and the Commission's rebuilding objective has been achieved (ICCAT 2009). Projections of future stock levels for the next decade under Total Allowable Catch (TAC) scenarios ranging from 10,000t to 15,000t indicate that current catches levels will maintain or slightly increase biomass. The 2007 and 2008 catches were 10% and 22% below the estimated MSY level, respectively, thus allowing the stock to grow in biomass.

The ICCAT management strategy contains no explicitly defined Limit Reference Point (LRP), but the MSC scoring allows a default to be used dependent on whether or not  $B_{MSY}$  is smaller or larger than 40% of virgin biomass ( $B_{40\%}$  or 49, 500t). Since  $B_{MSY}$  is greater than  $B_{40\%}$ , the default limit reference point was  $B_{25\%}$  or 31,000t which is lower than the biomass when stock rebuilding action was taken in the 1990s. Nevertheless, this requires a condition for the certification to be maintained. There is some work needed with respect to the harvest strategy. The harvest strategy for North Atlantic Swordfish is essentially the ICCAT objective of maintaining catches at maximum sustainable levels. Management actions are taken by ICCAT to either recover stocks to that level or to maintain at that level. Those decisions are made based upon scientific advice and advice from constituents. While the strategy of setting quotas to achieve the target  $B_{MSY}$  over the long-term is expected to maintain the stock above a default limit reference point ( $B_{25\%}$ ), and is also likely to work based upon prior experience, it does not include an explicit limit reference point. Nevertheless, monitoring is in place to determine whether or not the harvest strategy is working. There is sufficient information on stock structure and stock productivity (e.g., maturity, growth) on which to base a harvest strategy. The composition of the longline fleet and its operations is relatively well understood. Stock abundance is regularly monitored through fishery catch rate indices from a number of harvesting nations (ICCAT, 2009). Landings are generally dockside monitored and information on removals from the other fleets (harpoon and international) exploiting the stock is considered adequate to inform the Harvest Control Rule (HCR). ICCAT (2009) reported that Illegal, Unreported and Unregulated (IUU) vessels are no longer considered to be a significant concern due to the actions taken by ICCAT and the member countries to curtail those activities. By the third surveillance audit, evidence must be presented by the fishery client that shows that well defined harvest control rules are in place that are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached.

Overall score for Principle 1: 80

**Principle 2** examines five components which are considered to cover the range of potential ecosystem elements that may be impacted by a fishery, taking into account the status, management strategies and information relevant to each of these components.

Overall Score for Principle 2: 81.7

**Principle 3** examines the structure and performance of the management system. In the case of Highly Migratory Species (HMS) in the Atlantic such as swordfish, this necessarily focuses on management both at the national level through NMFS and at the international level through ICCAT. While the management structures at both levels are undeniably well developed and established, ICCAT has a mixed record with respect to its management performance. Many reviews have focused on its significant management failures, such as with respect to Bluefin tuna, but swordfish has been one of its notable successes, with the stock reaching the rebuilding target three years early. Overall the fishery scores well under P3, with an average of 86.1. PIs that scored particularly well are 3.1.1 Legal and/or Customary Framework, 3.2.1 Fishery Specific Objectives, and 3.2.4 Research Plan. The main deficiency is with respect to a lack of formal adoption of the Precautionary Approach at

ICCAT<sup>53</sup>. This reduces the score to below 80 for one PI – 3.1.3 (Long Term Objectives). This results in a condition with a timeline for ICCAT to adopt the Precautionary Approach by the fourth annual audit.

Overall Score for Principle 3: 88.5

## 6.3 Summary of Conditions

Table 371 lists the Conditions by number against the relevant Performance Indicator. This table is for summary purposes only. See Appendix 1.2 for full Conditions.

Table 371 Summary of Conditions

Condition number	Condition	Performance Indicator	Related to previously raised condition? (Y/N/N/A)
1.1	Reference Points	1.1.2	Y
1.2	Harvest control rules and tools	1.2.2	Y
2.1	Bycatch species information	2.2.3	Y
2.2	ETP species outcome	2.3.1	Y
2.3	ETP management	2.3.2	N
2.4	ETP information	2.3.3	Y
3.1	Long term objectives	3.1.3	Y

## 6.4 Determination, Formal Conclusion and Agreement

The Performance of the U.S. North Atlantic Swordfish Pelagic Longline and Headgear Buoy Line Fishery in relation to MSC Principles 1, 2 and 3 is summarized below:

MSC Principle	Fishery Performance
<b>Principle 1:</b> Sustainability of Exploited Stock	Overall: 80
<b>Principle 2:</b> Maintenance of Ecosystem	Overall: 81.7
<b>Principle 3:</b> Effective Management System	Overall: 88.5

The fishery attained a score of 80 or more against each of the MSC Principles. The MRAG Americas Assessment Team, therefore, recommends that the US North Atlantic Swordfish Pelagic Longline and Headgear Buoy Line Fishery be certified according to the Marine Stewardship Council Principles and Criteria for Sustainable Fisheries. A number of Conditions have been identified that the fishery must satisfy in order to maintain this Certification. Details are provided in Appendix 1.2.

Following this Recommendation of the assessment team, and review by stakeholders and peer-reviewers, a determination is hereby made by the MRAG Americas Certification Committee (MACC) to certify the US North Atlantic Pelagic Longline and Handgear Buoy Line Fishery.

<sup>53</sup> With respect to fishery management objectives, this is addressed under PI 3.1.3 Long Term Objectives, and not under 3.2.1 Fishery Specific Objectives.

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## 8 Appendices

### Appendix 1 Scoring and Rationales

#### Appendix 1.1 Performance Indicator Scores and Rationale

##### Principle 1

Evaluation Table: PI 1.1.1

PI 1.1.1		The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing	
SG	Issue	Met? (Y/N)	Justification/Rationale
60	a	Y	It is <b>likely</b> that the stock is above the point where recruitment would be impaired.
			See 80a
80	a	Y	It is <b>highly likely</b> that the stock is above the point where recruitment would be impaired.
			<p>The last ICCAT assessment for North Atlantic swordfish was conducted in 2009, with the next assessment scheduled for 2013 (ICCAT 2009).</p> <p>The successful implementation of the rebuilding plan is evident in the fact that in 2001 biomass had rebuilt to 94% of <math>B_{MSY}</math>. Further rebuilding was reported in the 2006 ICCAT stock assessment for swordfish, at which time it was estimated that biomass was at 99% of the biomass needed for MSY. The 2009 stock assessment states that biomass is at or above <math>B_{MSY}</math> and the Commission's rebuilding objective has been achieved (ICCAT 2009).</p> <p>The 2009 stock assessment estimated biomass for swordfish was 4.8% above the biomass needed for MSY. Stock status analysis indicated that biomass is at or above <math>B_{MSY}</math>, and thus the Commission's rebuilding objective has been achieved (ICCAT 2009). Based on production model analysis, the MSY was estimated at 13,730t, the biomass beginning in 2008 was estimated at 1.048 of the biomass needed to produce MSY. Additionally, fishing mortality has been below <math>F_{MSY}</math> since 2005. The stock assessment summary states that the estimate of stock status in 2009 is relatively similar to the estimated status from the 2006 assessment, and suggest that there is a greater than 50% probability that the stock is at or above <math>B_{MSY}</math>, and thus the Commission's rebuilding objective has been achieved (Figures 1 and 2). In addition, relative trends in fishing mortality show that the fishing mortality rate has continued to decline, and mortality from fishing has been consistently below <math>F_{msy}</math> since 2001 (ICCAT 2009). It is important to note that catches since 2003 have been below the TAC's, therefore increasing the chances for a fast recovery.</p> <p>Based on the 2009 assessment, the Committee recommended reducing catch limits allowed by Rec. [06-02] of 15,345t to no more than 13,700t in order to remain consistent with the goals of the Commissions swordfish rebuilding plan, and to maintain the northern Atlantic swordfish stock at a level that could produce MSY. A TAC of 13,000t would provide approximately a 75% probability of maintain the stock at a level consistent with the Convention Objective over the next decade and would also be consistent with a precautionary Fishery Management approach (ICCAT 2009).</p> <p>Projections of future stock levels were made for the next decade under TAC scenarios ranging from 10,000t to 15,000t using production models, indicating that current catches levels will maintain or slightly increase biomass. Results of the 2009 assessment indicated that there is a greater than 50% probability that the northern swordfish stock has rebuilt to or above <math>B_{MSY}</math>. The 2007 and 2008 catches were 10% and 22% below the estimated MSY level, respectively, thus allowing the stock to grow</p>

PI 1.1.1		The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing	
			<p>in biomass. It was determined that a TAC of 13,000t would provide approximately a 75% probability of maintain the stock at a level consistent with the Convention Objectives over the next decade (ICCAT 2009).</p> <p>To score this issue, it is necessary to determine the probability that the stock biomass is above the point at which recruitment would be impaired. As there is no explicit limit reference point for this stock, a default of <math>\frac{1}{2}B_{MSY}</math> was identified as per the MSC CR version 1.2 CB2.3.3.3. The 2009 assessment (ICCAT 2009) indicates that current biomass is at or slightly above the <math>B_{MSY}</math> target reference point. Under two surplus production model scenarios there is a low probability (less than 5%) that the 2009 stock biomass was at or below the default <math>\frac{1}{2}B_{MSY}</math> limit reference point. It is therefore <u>highly likely</u> that the stock is above the point where recruitment would be impaired.</p>
	b	Y	<p>The stock is at or fluctuating around its target reference point.</p>
			<p>ICCAT (2009) indicates that stock biomass is at or slight above to the target <math>B_{MSY}</math>, therefore it can be regarded as being at or fluctuating around the target reference point.</p>
100	a	N	<p>There is a <b>high degree of certainty</b> that the stock is above the point where recruitment would be impaired.</p>
			<p>While it is <u>highly likely</u> that the stock is above the point where recruitment would be impaired, we note that <math>\frac{1}{2}B_{MSY}</math> may not be an appropriate default limit reference point. Nor is it expected that <math>B_{MSY}</math> is an appropriate limit reference point. Additionally, <math>F_{MSY}</math> as it is currently being estimated is may be high as compared to generally recognized <math>F_{MSY}</math> proxies. A higher biomass for a limit reference point than <math>\frac{1}{2}B_{MSY}</math> may be warranted. Therefore, it is not possible to state where or not stock biomass is above the limit reference point with a high degree of certainty, as required by this scoring issue.</p>
	b	N	<p>There is a <b>high degree of certainty</b> that the stock has been fluctuating around its target reference point, or has been above its target reference point, <b>over recent years</b>.</p>
<p>As with 100a and for similar reasons, it is not possible to say that there is a high degree of certainty that the stock has been fluctuating around its target reference point, or has been above its target reference point, over recent years.</p>			
References		ICCAT. 2009. Report of the Standing Committee on Research and Statistics for 2009. ICCAT. 2010. Report of the Standing Committee on Research and Statistics for 2010.	
Stock Status relative to Reference Points			
	Type of reference point	Value of reference point	Current stock status relative to reference point
Target reference point	$B_{MSY}$	61,900 tonnes; $F_{MSY} = 0.22$	Relative Biomass ( $B_{2009}/B_{MSY}$ ): 1.05 (0.94 - 1.24) Relative Fishing Mortality Rate $F_{2008}/F_{MSY}$ : 0.76 (0.67 - 0.96)
Limit reference point	Default $B_{25\%}$	Not specifically estimated	Not specifically estimated
OVERALL PERFORMANCE INDICATOR SCORE:			80
CONDITION NUMBER (if relevant):			NA

Evaluation Table: PI 1.1.2

PI 1.1.2		Limit and target reference points are appropriate for the stock	
SG	Issue	Met? (Y/N)	Justification/Rationale
60	a	Y	Generic limit and target reference points are based on justifiable and reasonable practice appropriate for the species category.
			In relation to generic target and limit reference points (RP), stock rebuilding was initiated in 1999 when the biomass was 65 percent of $B_{MSY}$ or about 33 % of virgin biomass. This is taken as evidence of an implied generic limit reference point. A variety of age-based reference points are also available, although they are not considered appropriate for management because of weaknesses in the data. Thus, the fishery meets this scoring issue.
80	a	Y	Reference points are appropriate for the stock and can be estimated.
			A target reference point of $MSY$ used in assessment and management reporting are generally considered appropriate for the stock and can be estimated. $B_{MSY}$ (61.9 kt) and $F_{MSY}$ (0.22), the target RPs, are provided in ICCAT (2009). Because of the availability of reference points and the implicit limits suggested by the initiation of the recovery plan in the 1990s the fishery is considered to meet this scoring issue.
	b	N	The limit reference point is set above the level at which there is an appreciable risk of impairing reproductive capacity.
			MSC CR Version 1.2 CB2.3.3.3 states that when there is no analytically determined LRP, the default LRP should be $\frac{1}{2}B_{MSY}$ . This dependent on whether or not $B_{MSY}$ is smaller or larger than 40% of virgin biomass ( $B_{40\%}$ or 49.5 kt). Since $B_{MSY}$ is greater than $B_{40\%}$ , the default limit reference point is $\frac{1}{2}B_{MSY}$ or 31.0 kt which is lower than the biomass when stock rebuilding action was taken in the 1990s. While the default limit reference point is <u>likely</u> above the level at which there is an appreciable risk of impairing reproductive capacity, this is very uncertain. Additionally, these reference points have not been formally adopted so it is unclear whether they would be used in management. Therefore, it was considered that this scoring issue was not met, and, a condition was imposed.
	c	Y	The target reference point is such that the stock is maintained at a level consistent with $B_{MSY}$ or some measure or surrogate with similar intent or outcome.
			<p>Harvest strategies are often specified using references for fishing mortality (<math>F</math>) and biomass (<math>B</math>). Article VIII of the ICCAT Convention states that the objective is to maintain populations at levels which will permit the maximum sustainable catch (<math>MSY</math>). However, it is generally accepted that the prevailing interpretation of the Precautionary Approach considers <math>F_{MSY}</math> and <math>B_{MSY}</math> as limits.</p> <p>The ICCAT Glossary of Fishery Terms (ICCAT, 2000) defines <math>B_{MSY}</math> or biomass at <math>MSY</math> as a biological reference point. It is the long-term average biomass value expected if fishing at <math>F_{MSY}</math>. The text of the International Convention for the Conservation of Atlantic Tunas states that ICCAT is responsible for “<i>studying and appraising information concerning measures and methods to ensure maintenance of the populations of tuna and tuna-like fishes in the Convention area at levels which will permit the maximum sustainable catch and which will ensure the effective exploitation of these fishes in a manner consistent with this catch</i>” (Article IV, paragraph 2.b).</p> <p>The glossary defines fishing mortality at maximum sustainable yield (<math>F_{MSY}</math>) as a biological reference point. It is the fishing mortality rate which, if applied constantly, would result in Maximum Sustainable Yield (<math>MSY</math>). <math>F_{MSY}</math> is the implicit fishing mortality target of the International Convention for the Conservation of Atlantic Tunas. However, ICCAT has not explicitly defined limit reference points for its management. Nevertheless, biomass and fishing mortality rate trends are compared to candidate limit reference points in the assessments. These limit and target reference points are appropriate for the stock. The target reference point is such that the stock is maintained at a level consistent with <math>B_{MSY}</math> and the limit reference point does not</p>

PI 1.1.2		Limit and target reference points are appropriate for the stock	
SG	Issue	Met? (Y/N)	Justification/Rationale
			pose a risk of impairing reproductive capacity (ICCAT-SCRS 2006. SCI-040/2006).  A target reference point is defined which is consistent with $B_{MSY}$ . Thus, the fishery meets this scoring issue.
	d		Key low trophic level species, the target reference point takes into account the ecological role of the stock.
			As swordfish occupies a higher trophic level, this scoring issue is not applicable. (Reference: CR Annex CB2.3.13, CB2.3.18)
	100	b	N
See 80b			
c		N	The target reference point is such that the stock is maintained at a level consistent with $B_{MSY}$ or some measure or surrogate with similar intent or outcome, or a <b>higher level</b> , and takes into account relevant precautionary issues such as the ecological role of the stock with a <b>high degree of certainty</b> .
	While the target reference point defined is consistent with $B_{MSY}$ , it is not clear that it takes into account relevant precautionary issues such as the ecological role of the stock with a high degree of certainty. The fishery does not meet this scoring issue.		
References		[List any references here]	
OVERALL PERFORMANCE INDICATOR SCORE: The 80a and 80c scoring issues were met, the 80b was not and the 80d was not applicable. A score of 75 was awarded and a Condition imposed.			75
CONDITION NUMBER (if relevant):			1.1

Evaluation Table: PI 1.1.3

PI 1.1.3		Where the stock is depleted, there is evidence of stock rebuilding	
SG	Issue	Met? (Y/N)	Justification/Rationale
60	a		Where stocks are depleted rebuilding strategies which have a reasonable expectation of success are in place.
			Following significant declines in Atlantic swordfish populations, ICCAT implemented a recovery plan in 1999 to rebuild the North Atlantic swordfish stock. The plan reduced the international fishing quota for the species to 10,400mt that was divided among all nations fishing the stock, including the United States, Canada, European Community, Japan and several minor harvesters, significantly reducing effort. This plan was updated in 2004 (ICCAT 2004-02), following the assessment of swordfish stocks in the North Atlantic. The plan was updated again in 2006 (ICCAT 2006-02) based on the 2006 North Atlantic swordfish assessment. Reduction in fishing effort occurred, and in 2006, the biomass of the North Atlantic Swordfish was estimated to be 99% of what was needed to produce MSY (ICCAT 2008). Furthermore, results of the 2009 stock assessment indicate that biomass is at or above $B_{MSY}$ and the Commission has been successful in achieving the objectives of rebuilding plan (ICCAT 2009).
	b		A rebuilding timeframe is specified for the depleted stock that is the shorter of 30 years or 3 times its generation time. For cases where 3 generations is less than 5 years, the rebuilding timeframe is up to 5 years.
			The rebuilding strategy put in place in 1999 for the species has demonstrated continuous stock rebuilding and based on the most recent stock assessment the rebuilding target has been reached. The rebuilding plan was updated in 2004 (ICCAT 2004-02) and again in 2006 (ICCAT 2006-02) consistent with the updated stock assessments in each of those years.
	c		Monitoring is in place to determine whether they are effective in rebuilding the stock within a <b>specified</b> timeframe.
			See 80b
80	a		Where stocks are depleted rebuilding strategies are in place.
	b		A rebuilding timeframe is specified for the depleted stock that is the shorter of 20 years or <b>2 times its generation time</b> . For cases where 2 generations is less than 5 years, the rebuilding timeframe is up to 5 years.
	c		There is <b>evidence</b> that they are rebuilding stocks, or it is <b>highly likely</b> based on simulation modelling or previous performance that they will be able to rebuild the stock within a <b>specified</b> timeframe.
100	a		Where stocks are depleted, strategies are demonstrated to be rebuilding stocks continuously and there is strong evidence that rebuilding will be complete <b>within the specified timeframe</b> .
	b		The shortest practicable rebuilding timeframe is specified which does not exceed <b>one generation</b> time for the depleted stock.
References		ICCAT. 2009. Report of the Standing Committee on Research and Statistics for 2009	
OVERALL PERFORMANCE INDICATOR SCORE: This PI is only scored when PI 1.1.1 reveals that a stock is depleted. A stock is considered depleted when it is consistently below the target reference point. Stocks scoring less than 80 on PI 1.1.1 would normally fall into this category. ICCAT (2009) indicates that			NA
US North Atlantic Swordfish Pelagic Longline and Handgear Buoy Line Fishery			
Date of issue: 1 March 2013			



PI 1.1.3		Where the stock is depleted, there is evidence of stock rebuilding		
SG	Issue	Met? (Y/N)	Justification/Rationale	
current stock biomass is at or slightly above the target $B_{MSY}$ and has been so since 2008. Thus the stock is considered rebuilt. PI 1.1.1 was scored 80. For this reason, this PI is not being scored.				
CONDITION NUMBER (if relevant):				NA

Evaluation Table: PI 1.2.1

PI 1.2.1		There is a robust and precautionary harvest strategy in place	
SG	Issue	Met? (Y/N)	Justification/Rationale
60	a	Y	The harvest strategy is <b>expected</b> to achieve stock management objectives reflected in the target and limit reference points.
			The harvest strategy for North Atlantic Swordfish is essentially the ICCAT objective of maintaining catches at maximum sustainable levels. Management actions are taken by ICCAT to either recover stocks to that level or to maintain at that level. Those decisions are made based upon scientific advice and advice from constituents. This process, then, constitutes the harvest strategy. The harvest strategy is expected to achieve stock management objectives reflected in the target and limit reference points. While an explicit limit reference point is not defined (see PI 1.1.2), the strategy of setting quotas to achieve the target $B_{MSY}$ over the long-term has been observed to maintain the stock above a default limit reference point ( $\frac{1}{2}B_{MSY}$ ) such that it is now above $B_{MSY}$ .
	b	Y	The harvest strategy is <b>likely</b> to work based on prior experience or plausible argument.
			Stock assessments based on scientific data from fisheries-dependent and fisheries-independent sources are analyzed by ICCAT's SCRS resulting in management recommendations relative to ICCAT objectives (MSY) and to other management issues as defined by the Commission. In the case of swordfish, this advice has been used to set TACs. Each ICCAT assessment, conducted by the SCRS, evaluates previous management measures in place and recommends changes as required to meet the management objectives. The harvest strategy is likely to work.
	c	Y	Monitoring is in place that is expected to determine whether the harvest strategy is working.
			The harvest strategy is periodically reviewed, typically on a 2-3 year cycle as part of the stock assessment produced by the SCRS, and changed as required to be consistent with the current stock assessment advice during the following ICCAT meeting. The performance of the strategy has been evaluated, again as part of the SCRS stock assessment process and has demonstrated that it has been achieving its objectives. Monitoring is therefore in place that is expected to determine whether the harvest strategy is working. This is demonstrated through periodic stock assessments and monitoring of the catches through ICCAT and the SCRS.
80	a	Y	The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy <b>work together</b> towards achieving management objectives reflected in the target and limit reference points.
			The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving management objectives reflected in the target and limit reference points. This is demonstrated by the detection of an overfished stock by the SCRS in the late 1980's and development of TACs and reductions in those TACs such that the stock recovered to a biomass greater than $B_{MSY}$ .
	b	Y	The harvest strategy may not have been fully tested but monitoring is in place and evidence exists that it is achieving its objectives.
			The harvest strategy may not have been fully tested but monitoring is in place and evidence exists that it is achieving its objectives. Again this is demonstrated by periodic stock assessments and that the strategy has been periodically reviewed and ICCAT recommendations made (in 1999, 2001, 2002, 2003, 2004, 2006, and 2008).
100	a	N	The harvest strategy is responsive to the state of the stock and is <b>designed</b> to achieve stock management objectives reflected in the target and limit reference points.
			The harvest strategy is responsive to the state of the stock and is designed to achieve stock management objectives reflected in the target and limit reference points. While generally the strategy has been responsive to SCRS advice as demonstrated by the ultimate recovery of the stock, the SCRS advice has not been totally adhered to: —The Committee noted that allowable catch levels agreed in [Recs. 06-02 and 08-02] exceeded scientific recommendations (ICCAT 2010). An explicit limit reference point is

PI 1.2.1		There is a robust and precautionary harvest strategy in place	
SG	Issue	Met? (Y/N)	Justification/Rationale
			not defined.
	b	N	The performance of the harvest strategy has been <b>fully evaluated</b> and evidence exists to show that it is achieving its objectives including being clearly able to maintain stocks at target levels.
			The performance of the harvest strategy has been fully evaluated and evidence exists to show that it is achieving its objectives including being clearly able to maintain stocks at target levels. The SCRS has conducted simulations to evaluate the impact of a range of harvest rates on stock status but this does not include the complete range of sources of uncertainty (e.g. observation, process and model error). Notwithstanding this, the annual assessment process through SCRS indicates that the harvest strategy is achieving its objectives.
	d	Y	The harvest strategy is periodically reviewed and improved as necessary.
			The strategy has undergone testing and evidence exists that it is achieving its objectives particularly in regard to the target $B_{MSY}$ . In addition the strategy is periodically reviewed and modified as necessary by the ICCAT SCRS.
References		[List any references here]	
OVERALL PERFORMANCE INDICATOR SCORE: both 80a and 80b are met; 100c is met, but 100a and 100b are not fully met.			85
CONDITION NUMBER (if relevant):			NA

Evaluation Table: PI 1.2.2

PI 1.2.2		There are well defined and effective harvest control rules in place	
SG	Issue	Met? (Y/N)	Justification/Rationale
60	a	Y	<p><b>Generally understood</b> harvest rules are in place that are consistent with the harvest strategy and which act to reduce the exploitation rate as limit reference points are approached.</p> <p>The focus of this PI is how fishing mortality and associated management actions (e.g. quotas) are established in order to ensure that limit reference points (e.g. default <math>\frac{1}{2}B_{MSY}</math>) are avoided. ICCAT defines harvest control rules (HCRs) primarily through the definition of TACs which attempt to maintain or rebuild stocks to the MSY biomass. Thus, the extant rule is to allow catches of MSY for those stocks that are above BMSY and to rebuild to BMSY for those stocks that are below. However, the practice has to been to allow status quo catches to be maintained until a status problem has been detected, at which time TACs are established or existing TACs are reduced. In the case of swordfish, this was the case some two decades ago. However, the process became more specified and transparent with the advent of recovery plans in 1999. Nevertheless, now that the stock has recovered, there are no formal ICCAT control rules to guide contingencies and uncertainties in the future.</p> <p>The US implementation of ICCAT rules is specific to the US fisheries, including longline fisheries. These include fleet quotas, individual quotas, time / area closures, observer coverage requirements, VMS requirements, dock side monitoring requirements, hail in / hail out requirements, logbook requirements, season, transfer processes, by-catch reduction measures, and other control measures associated with the fishery.</p>
	c	Y	<p>There is <b>some evidence</b> that tools used to implement harvest control rules are appropriate and effective in controlling exploitation.</p> <p>ICCAT relies on its Contracting Party Countries (CPCs) to implement harvest control rules through suitable harvest control tools that will allow the stated objectives to be met by the organization and its membership. Conservation measures (harvest rules) take many forms including overall TACs for each species, country specific TACs, CPC allocations by various fleet sectors, effort restrictions per CPC group, time/ area closures to protect spawning or nursery populations, minimum size restrictions to protect juvenile fish. For example, swordfish is subject to country specific quotas, and minimum size options (ICCAT, 2008). Additional harvest control rules agreed to by ICCAT and adopted by the CPCs include the introduction of annual bycatch allocations of small tonnage of bluefin tuna for specific fisheries in specific locations.</p>
80	a	N	<p><b>Well defined</b> harvest control rules are in place that are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached.</p> <p>At the national level in the US, there are well defined harvest control rules in place for the assessed fishery that take into account a wide range of uncertainty. However, the definition and implementation of rules at the international level is limited.</p> <p>The HCR stated in the ICCAT rebuilding plan focuses on attainment of the <math>B_{MSY}</math> target rather than avoidance of a biomass limit (ICCAT, 1999). While reference is made in the rebuilding plan to the stock being over-exploited at <math>F &gt; F_{MSY}</math>, there is no explicit HCR which reduces fishing mortality as the default limit reference point is approached. ICCAT did reduce fishing mortality when biomass was 65% of <math>B_{MSY}</math> or <math>B_{33\%}</math>, which implies that ICCAT has a generally understood HCR which acts to limit exploitation as the limit biomass is approached. However, it is not obvious what ICCAT would do if the resource once again declined towards <math>B_{33\%}</math>.</p> <p>There is therefore no clear evidence of formal control rules at the international level which define the extent and scope of future exploitation rates in response to the stock's status falling below target reference points or approaching limit reference points.</p>

PI 1.2.2		There are well defined and effective harvest control rules in place	
SG	Issue	Met? (Y/N)	Justification/Rationale
	b	Y	The <b>selection</b> of the harvest control rules takes into account the <b>main</b> uncertainties.
			Uncertainty is accounted for within the stock assessment advice that is used to produce the harvest control rules and tools. The stock assessment of North Atlantic swordfish incorporates the main observation, process and model uncertainties. By inference, these are included in the HCR described above.
	c	Y	<b>Available evidence indicates</b> that the tools in use are appropriate and effective in achieving the exploitation levels required under the harvest control rules.
			There is available evidence that the harvest control rules used were appropriate to achieve the rebuilding goal for the stock. The main management tool is an annual TAC and there is evidence (ICCAT, 2009) this has been effective at achieving reduced fishing mortality. Some of the reduction in F was caused by effort transferral (EC transferring to the South Atlantic) and effort reduction (reduced number of vessel in the US fleet), but these too may have been indirectly affected by TAC reductions.
100	b		The <b>design</b> of the harvest control rules takes into account a <b>wide range</b> of uncertainties.
	c		<b>Evidence clearly shows</b> that the tools in use are effective in achieving the exploitation levels required under the harvest control rules.
References		ICCAT, 2008 ICCAT, 1999	
OVERALL PERFORMANCE INDICATOR SCORE: All scoring issues of SG 60 are met. The team considered that the 80b and 80c scoring issues were met. The 80a, 100b and 100c scoring issues were not met.			75
CONDITION NUMBER (if relevant):			1.2

Evaluation Table: PI 1.2.3

PI 1.2.3		Relevant information is collected to support the harvest strategy	
SG	Issue	Met? (Y/N)	Justification/Rationale
60	a	Y	<b>Some</b> relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy.
			There are several measures in place aimed at increasing information and monitoring within the swordfish fishery. These include, but are not limited to, logbooks, dockside monitoring, at sea observer coverage, and vessel monitoring.
	b	Y	Stock abundance and fishery removals are monitored and at least one indicator is available and monitored with sufficient frequency to support the harvest control rule.
			See 80b
80	a	Y	<b>Sufficient</b> relevant information related to stock structure, stock productivity, fleet composition and other data is available to support the harvest strategy.
			A comprehensive range of relevant information is collected to support the harvest strategy. Required information is monitored frequently and the main uncertainties are well understood. Detailed information on stock structure, stock productivity, fleet composition, stock abundance, fisheries removals, and other relevant information are contained in the latest ICCAT swordfish assessment (2009).
	b	Y	There is sufficient information on stock structure and stock productivity (e.g. maturity, growth) on which to base a harvest strategy. The composition of the longline fleet and its operations is relatively well understood. Stock abundance is regularly monitored through fishery catch rate indices from a number of harvesting nations (ICCAT, 2009). Landings are generally dockside monitored and information on removals from the other fleets (harpoon and international) exploiting the stock is considered adequate to inform the HCR. ICCAT (2009) reported that IUU vessels are no longer considered to be a significant concern due to the actions taken by ICCAT and the member countries to curtail those activities.
			Stock abundance and fishery removals are <b>regularly monitored at a level of accuracy and coverage consistent with the harvest control rule</b> , and one or more indicators are available and monitored with sufficient frequency to support the harvest control rule.
			ICCAT requires members to report information regarding fishing activities, including catches, catches by size, effort and CPUE and biological and distributional/migration data. Responsibility for reporting lies with the member country, but in the developed fisheries the monitoring mechanisms include logbook reports, monitoring of dealers, at-sea observers and dockside sampling of sizes. In the case of the United States, these are all done.
			The United States implemented a fleet-wide VMS requirement in the Atlantic pelagic longline fishery effective September 1, 2003. This rule requires all vessels away from port with pelagic longline gear onboard to operate their VMS units.
			There is randomized observer sampling of the U.S. large pelagic longline fleet. The data collected through this program have been used to quantify the composition, disposition, and quantity of the total catch (both retained and discarded at sea) by this fleet which fishes in waters of the northwest Atlantic Ocean, Gulf of Mexico, and the Caribbean Sea. Selection of the vessels is based on a random sampling of the number of sets reported by the longline fleet. The percent of fleet coverage increased from 2.5% in 1992 to 13.5% in 2008. The goal of this increase was to collect data to better characterize the interaction between the longline fleet and bluefin tuna during the spawning season. Comparable observer coverage of the US handgear fishery does not

PI 1.2.3		Relevant information is collected to support the harvest strategy	
SG	Issue	Met? (Y/N)	Justification/Rationale
			occur, but observations by David Kerstetter demonstrate that the handgears have very high survival of released swordfish (David Kerstetter, Ph.D., Nova Southeastern University, pers. comm., March 2011); combined with the relatively low harvest by handgears, monitoring of the longline sector characterizes the discard mortality of the swordfish at an accuracy sufficient to support the harvest control rules.
	c	Y	There is good information on all other fishery removals from the stock.
			The reporting requirements from ICCAT described under 80b result in good information for all removals from the stock by other fishing fleets and nations. The randomized observer sampling of the U.S. large pelagic longline fleet and landing records provide good information on the composition, disposition, and quantity of US fishery removals from the stock.
100	a	N	A <b>comprehensive range</b> of information (on stock structure, stock productivity, fleet composition, stock abundance, fishery removals and other information such as environmental information), including some that may not be directly related to the current harvest strategy, is available.
			While the information and monitoring is <u>sufficient</u> to support the implied HCR, a <u>comprehensive</u> range of information to support management is lacking
	b	N	<b>All information</b> required by the harvest control rule is monitored with high frequency and a high degree of certainty, and there is a good understanding of inherent <b>uncertainties</b> in the information [data] and the robustness of assessment and management to this uncertainty.
An issue is the adequacy of at-sea observer coverage, which for the longline fleet has ranged from 2-6% of sea days for the US fishery, although in 2008 it reached about 13% of the sets. These data jointly with logbook data provide the basis of CPUE indices used in the stock assessment. Equally important the observer data is the basis for making bycatch (discard) estimates and monitoring of those stocks. There is limited analysis of the adequacy of this sampling coverage. However, sampling is likely too low to provide more than general trends on age groups in the fishery. Therefore, the sampling strategy has been to get as many samples as possible given the vagaries of annual budgets. Then those observer samples are allocated to vessels such that there is a proportional coverage of the spatial-temporal distribution of the catch, based upon a vessels past practices. However, it is still unclear the adequacy of observer coverage for bycatch estimation. Also, while size-frequency data is abundant (extensive reporting of the gilled and gutted size of individual fish), their usefulness in current assessment practices is limited. At sea observation is a method to address this problem.			
References		[List any references here]	
OVERALL PERFORMANCE INDICATOR SCORE: All scoring issues at the 60 and 80 levels are met, but neither of the scoring issues at 100 is met.			80
CONDITION NUMBER (if relevant):			NA

Evaluation Table: PI 1.2.4

PI 1.2.4		There is an adequate assessment of the stock status	
SG	Issue	Met? (Y/N)	Justification/Rationale
60	b	Y	The assessment estimates stock status relative to reference points.
			The North Atlantic swordfish stock is assessed by ICCAT. The SCRS prepares a full assessment every 3-4 years. The last assessment conducted on the stock by ICCAT was completed in 2009, with the next scheduled assessment to be conducted in 2013. Each assessment conducted by the SCRS for the last decade has provided estimates of current and historical biomass relative to $B_{MSY}$ and current and historical fishing mortality rate relative to $F_{MSY}$ . While there is no formal limit reference point, the assessment calculates biomass relative to a number of reference points which might be adopted as limit reference points in the future. While there is no formal harvest control rule adopted, there is a default rule governed by the target of $B_{MSY}$ .
	c	Y	The assessment <b>identifies major sources</b> of uncertainty.
			The assessment identifies major sources of uncertainty. Major sources of uncertainty are the size-sex-age relationship for the fish in the catch, uncertainties in the stock boundaries, particularly the southern boundary at 5 degrees north, and the natural mortality rate.
80	a	Y	The assessment is appropriate for the stock and for the harvest control rule.
			The assessment is appropriate for the stock and for the harvest control rule, and is evaluating stock status relative to reference points. Due to the highly migratory nature of the species involved stock assessments rely heavily on the commercial data, such as CPUE, submitted by member nations to the ICCAT Swordfish Species Group annually. A large number of modelling approaches have been explored. A biomass index for the North Atlantic swordfish reflects the combined standardized CPUE from the longline fleets of the United States, Spain, Canada, Japan, Morocco and Portugal (ICCAT 2009). Additionally, age-specific standardized CPUE indices from US, EC and Canadian fleets are developed and monitored.
	c	Y	Production models were utilized during the last assessment of North Atlantic swordfish, a non-equilibrium model (ASPIC v 5.05), and the Bayesian statistical approach for stock assessment with a surplus production function described in SCRS 1999/085. The total North Atlantic reported catch from 1950-2008, including estimated dead discards was used for modeling. In addition to production models, virtual population analysis were conducted for the North Atlantic Stock using VPA-2BOX, with catch at age data derived for 1978-2008 catch-at-size using the unisex Gompertz growth equation. Only the Canadian and United States indices were updated since the 2006 stock assessment and included values for 2006-2008; the Japanese and Spanish indices were carried over from the 2006 stock assessment. Details on the models, VPA and sensitivity analysis are outlined in the 2009 Swordfish Stock Assessment (ICCAT 2009).
			The assessment <b>takes uncertainty into account</b> .
			The assessment takes uncertainty into account. The assessment estimates stock status relative to the target $B_{MSY}$ and $F_{MSY}$ reference points in a probabilistic way. Regarding major sources of uncertainty, observation uncertainty is incorporated through the use of a number of CPUE indices. There is however, no consideration of error in the catch. Process uncertainty is incorporated through consideration of Schaefer and Fox SPM formulations and use of a Bayesian SPM to explore variance in the model's parameters (e.g. $r$ and $K$ ). It is less clear how model uncertainty has been incorporated. An age-structured (VPA) approach is explored and the results compared to those of the age-aggregated (SPM) approach although differences between the two and their implications for the HCR do not appear to be taken into account.
	e	Y	The assessment of stock status is subject to peer review.
			The assessment of the stock status is subject to peer review. Internal peer review of stock assessments are conducted by the ICCAT SCRS which usually meets in October of every year. Additionally, working group meetings are held within a year on an ad-hoc as needed basis. Usually these are used to prepare data and analyses prior to an



PI 1.2.4		There is an adequate assessment of the stock status	
SG	Issue	Met? (Y/N)	Justification/Rationale
			assessment meeting. Once an assessment has been reviewed by the full SCRS, an executive summary is presented to the Commission.
100	a	N	The assessment is appropriate for the stock and for the harvest control rule and takes into account the major features relevant to the biology of the species and the nature of the fishery.
			The assessment is appropriate for the stock and for the harvest control rule and takes into account the major features relevant to the biology of the species and the nature of the fishery. Limited data on sex-age-size in the catch is a major deficiency of the assessment. Additionally, there is no formal harvest control rule.
	c	Y	The assessment takes into account uncertainty and is evaluating stock status relative to reference points in a <b>probabilistic</b> way.
			The assessment takes into account uncertainty and is evaluating stock status relative to reference points in a probabilistic way. Alternative hypotheses have been explored but not yet rigorously. SCRS made a research recommendation (ICCAT, 2006) to investigate a statistical catch at age formulation to better address issues of uncertainty. However, any model will have to deal appropriately with the abundant size-frequency data of gilled and gutted fish which cannot be used to generate catch at age by sex estimates.
	d	Y	The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored.
			The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored. Process uncertainty is incorporated through consideration of Schaefer and Fox SPM formulations and use of a Bayesian SPM to explore variance in the model’s parameters (e.g. r and K). It is less clear how model uncertainty has been incorporated. An age-structured (VPA) approach is explored and the results compared to those of the age-aggregated (SPM) approach although differences between the two and their implications for the HCR do not appear to be taken into account.
e	N	The assessment has been <b>internally and externally</b> peer reviewed.	
		ICCAT has a process for including external peer review, however, due to budgetary restrictions this is not always done for swordfish.	
References		ICCAT 2009	
OVERALL PERFORMANCE INDICATOR SCORE: Scoring issues of 60b, 60c, 80a, 80c, 80e, 100c and 100d are fully met; 100a and 100e are not fully met.			90
CONDITION NUMBER (if relevant):			NA

## Principle 2

Evaluation Table: PI 2.1.1

PI 2.1.1		The fishery does not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species	
SG	Issue	Met? (Y/N)	Justification/Rationale
60	a	Y	<p>Main retained species are <b>likely</b> to be within biologically based limits (if not, go to scoring issue c below).</p> <p><b>Bigeye tuna</b> In general data availability is good for bigeye tuna and continues to improve with developments in abundance indices for the different fleets. The 2010 ICCAT assessment of bigeye tuna, estimated the current stock biomass to be 1.01 BMSY (0.72- 1.2) (median and 80% CL) with current relative fishing mortality 0.95 <math>F_{MSY}</math> (0.65- 1.55 80% CL) (median of). The limit reference points for this species are defined by NMFS as 0.6MSY (MSST) and <math>F_{year}/F_{MSY} = 1</math> (MSMT). This species is therefore considered to be <b>highly likely</b> to be within the biologically based limits defined by NMFS.</p>
		Y	<p><b>Yellowfin tuna</b> There is some uncertainty associated with the input data available for the ICCAT yellowfin assessment and which model represents the best method to assess the status of this stock. This is dealt with to some extent by combining the results from different model runs to estimates current status. The relative current biomass and fishing mortality rate estimates from the most recent 2011 ICCAT assessment for yellowfin tuna were <math>B_{2010}/B_{MSY}</math> is 0.85 (0.61-1.12) and <math>F_{current(2010)}/F_{MSY}</math> is 0.87(0.68 - 1.40) respectively. NMFS set limit reference points (MSST and MFMT) for this species as 0.5<math>B_{MSY}</math> (age 2+) and <math>F_{year}/F_{MSY} = 1.0</math> respectively; and considers the stock not to be overfished or suffering from overfishing (but is considered to be approaching overfishing (NMFS, 2012). Yellowfin is therefore considered to be <b>likely</b> to be within biologically based limits.</p>
		N, but see c	<p><b>Albacore tuna</b> The latest stock assessment for north Atlantic albacore was carried out in 2009, using data up to 2007 and indicated that the stock has remained below <math>B_{MSY}</math> and fishing mortality rates have been above <math>F_{MSY}</math> since the 1960s; current relative biomass is <math>B_{2009}/B_{MSY}=0.62</math> and current relative fishing mortality rate is <math>F_{2007}/F_{MSY}=1.045</math>. NMFS defines the stock as being overfished and as suffering from overfishing.</p>
		N, but see c	<p><b>Atlantic bluefin tuna</b> The latest stock assessment for western Atlantic bluefin tuna was carried out in 2010 and assumed that future recruitment fluctuates between two alternative 'high' and 'low' recruitment scenarios. Depending on which of these scenarios is applied, the stock is either considered to be overfished and suffering from overfishing (low recruitment) or not overfished and not suffering from overfishing (low recruitment). There is insufficient evidence currently to favour one of the scenarios over another; therefore assessment results from each are considered to be upper and lower bounds to rebuilding potentially. The stock is not considered likely to be within biological limits.</p>
		N, but see c	<p><b>Dolphinfish</b> An exploratory assessment carried out in 2000 (Prager, 2000; SAFMC, 2003) gave no indication that this stock is overfished or suffering from overfishing. However, there are no reliable biomass estimates for dolphinfish, therefore it is difficult to conclude that the species is likely to be within the biologically based limits (MSST set at 50% BMSY, (SAFMC, 2003)).</p>
		N, but see c	<p><b>Shortfin mako shark</b> The latest stock assessment by ICCAT (2009) concluded there was a non-negligible probability that the North Atlantic stock of shortfin mako is below BMSY (<math>B_{2007}/B_{msy} = 0.95-1.65</math>) and that fishing mortality could be above <math>F_{MSY}</math></p>

PI 2.1.1		The fishery does not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species	
SG	Issue	Met? (Y/N)	Justification/Rationale
			(F2007/FMSY = 0.48-3.77). No minimum Stock Size threshold is defined by NMFS.
	c		If main retained species are outside the limits there are <b>measures</b> in place that are <b>expected</b> to ensure that the fishery does not hinder recovery and rebuilding of the depleted species.
		n/a	<b>Bigeye tuna</b> Scoring Issue n/a (see a above)
		n/a	<b>Yellowfin tuna</b> Scoring Issue n/a (see a above)
		Y	<p><b>Albacore tuna</b></p> <p>Due to the overfished status of the northern albacore stock, ICCAT adopted Recommendation 98-08 to limit fishing capacity on the stock and pursuant to this the U.S. implemented limited entry to the Atlantic PLL fishery in 1999; this measure has demonstrably reduced effort of vessels fishing for this species since 1990. Due to the continued overfished status of the stock, ICCAT reduced the TAC in 2007, and established a rebuilding plan for this species in 2009 further reducing the TAC to 28,000t for 2010 and 2011. The current assessment indicates TAC in the future should be less than 28,000t to promote stock rebuilding, but the TAC for 2012 and 2013 remains at 28,000t.</p> <p>Catches from the fishery under certification have increased from 16% to 33% of the US quota limit set by ICCAT since 2008 (incl.). The US quota represents ~1.8-1.9% of the ICCAT TAC and total U.S. catches have remained well within the quota limit (in 2010 the catch was about 60% of quota).</p> <p>The current US measures that limit effort levels and maintain the catch within the TAC are expected to ensure that the fishery does not hinder recovery and rebuilding of the northern albacore stock.</p>
		Y	<p><b>Atlantic bluefin tuna</b></p> <p>Due to the overfished status of the western Atlantic bluefin stock, a 20-year rebuilding plan for the western Atlantic bluefin tuna (BFT) was initiated by ICCAT, designed to achieve <math>B_{MSY}</math> with at least 50% probability. In response to recent assessments, in 2008 ICCAT agreed a total allowable catch (TAC) of 1,900 t in 2009, 1,800 t in 2010 [Rec. 08-04], and 1,750 t in 2011 [Rec. 10-03] in line with advice from the SCRS. The U.S. quota represents about 50% of the total ICCAT TAC and includes dead discard estimates.</p> <p>There are measures in place in the US Atlantic PLL fishery in line with the ICCAT western Atlantic bluefin tuna rebuilding plan and include the quota, retention limits, quota monitoring, seasons, gear restrictions, trip catch limits, and size limits. Despite the large uncertainty about the long term future productivity of the stock, under either recruitment scenario considered, current catches (1,800t) should allow the biomass to continue to recover. The catch by US PLL vessels operating in the NW Atlantic (including the GOM) is less than 20% of the total US catch. The catch by the fishery under assessment (which excludes the GOM and Caribbean) represents an even smaller proportion (about 6% of the total US quota).</p>
		Y	<p><b>Dolphinfish</b></p> <p>The 2004 SAFMC FMP for dolphin and wahoo fishery in the Atlantic and other measures implemented in the region to manage bycatch, represent a strategy for managing dolphinfish. The FMP includes measures such as catch limits, trip limits, and minimum size limits. A recent amendment in 2009 (SAFMC, 2009) also required the designation of Essential Fish Habitat (EFH) for dolphinfish.</p>

PI 2.1.1		The fishery does not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species	
SG	Issue	Met? (Y/N)	Justification/Rationale
		Y	<p><b>Shortfin mako shark</b></p> <p>Measures in place implemented through the (1993) Fishery Management Plan for Sharks of the Atlantic Ocean that are expected to ensure that the fishery does not hinder recovery include quotas (for pelagic sharks), permit limits, trip limits. Additionally sharks must have their fins naturally attached through offloading.</p> <p>Final actions implemented by the 2010 Amendment 3 to the Consolidated HMS FMP in response to the status of this species, are to take action at the international level through international fishery management organizations to establish management measures to end overfishing of shortfin mako sharks, and to promote the live release of shortfin mako sharks in the domestic commercial and recreational shark fisheries.</p>
	d		If the status is poorly known there are measures or practices in place that are expected to result in the fishery not causing the retained species to be outside biologically based limits or hindering recovery.
		n/a	See c above for all species
80	a		Main retained species are <b>highly likely</b> to be within biologically based limits (if not, go to scoring issue c below).
		Y	<p><b>Bigeye tuna</b></p> <p>80% Confidence limits for estimates of current relative biomass are above the limit reference point (MSST) for bigeye tuna defined by NMFS. See detail under 60a above.</p>
		N, but see c	<p><b>Yellowfin tuna</b></p> <p>Although current relative biomass estimates (including the 80% confidence limits) are within limit reference points set by NMFS, when the uncertainty in the input data is taken into account, ICCAT Scientific Committee concluded that there was only a 26% chance that the stock was not overfished and overfishing was not occurring.</p>
		N, but see c	<b>Albacore tuna</b> is not highly likely to be within limits defined by NMFS, see 60a.
		N, but see c	<b>Atlantic bluefin tuna</b> is not highly likely to be within limits defined by NMFS, see 60a.
		N, but see c	<b>Dolphinfish</b> is not highly likely to be within limits defined by NMFS, see 60a.
		N, but see c	<b>Shortfin mako</b> is not highly likely to be within limits defined by NMFS, see 60a.
	c		If main retained species are outside the limits there is a <b>partial strategy of demonstrably effective</b> management measures in place such that the fishery does not hinder recovery and rebuilding.
		n/a	<p><b>Bigeye tuna</b></p> <p>This species is within biological limits.</p>
		Y	<p><b>Yellowfin tuna</b></p> <p>The U.S. has implemented a number of regulatory measures that ensure consistency with ICCAT recommendation 93-04, which prohibits increases in effective fishing effort for yellowfin tuna above levels observed in 1992. These include NMFS directed measures to limit access to tuna in the pelagic longline fishery through permit limits which have led to a decrease in effort of ~70% by vessels catching yellowfin since 1990. NMFS has also maintained a minimum size limit for retaining yellowfin tuna, despite this recommendation being repealed by ICCAT in 2005. In addition, area closures brought in for the US Atlantic PLL fishery, in 2000 and 2001, to reduce bycatch of juvenile swordfish and other species, has reduced catch and discard numbers by 39%</p>

PI 2.1.1		The fishery does not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species	
SG	Issue	Met? (Y/N)	Justification/Rationale
			and 44% respectively between the periods 1997-99 and 2005-2010. Circle hooks primarily introduced to the fishery to reduce sea turtle bycatch have proved to increase post-release survival chances for yellowfin tuna. These measures have been implemented under the Final Consolidated Atlantic HMS FMP (NMFS, 2006) and subsequent amendments (NMFS, 2008; 2010b) which comprise a strategy for managing all HMS species including yellowfin tuna.
		Y	<b>Albacore tuna</b> Implementation of a TAC for albacore and measures implemented by NMFS to support the ICCAT rebuilding plan for north Atlantic albacore which have proven to be demonstrably effective in limiting effort of vessels fishing for this species, stem from the Final Consolidated Atlantic HMS FMP (NMFS, 2006) and subsequent amendments (NMFS, 2008; 2010b) which comprise a strategy for managing all HMS species including albacore tuna.
		Y	<b>Atlantic bluefin tuna</b> Effort limits imposed on the US Atlantic PLL fishery by NMFS have demonstrably reduced effort by vessels fishing for this species; but landings of the species have increased since 2003, but not beyond U.S. or gear quotas which are in line with ICCAT rebuilding programme. The effort limits have been implemented under the Final Consolidated Atlantic HMS FMP (NMFS, 2006) and subsequent amendments (NMFS, 2008; 2010b); there are measures in place on the US Atlantic PLL fishery designed to be in line to varying degrees with the ICCAT western Atlantic bluefin tuna rebuilding plan and include the quota, retention limits, quota monitoring, seasons, gear restrictions, trip catch limits, and size limits, which comprise a strategy for managing all HMS species including bluefin tuna. The US quota represents about 50% of the TAC for the western Atlantic bluefin stock, but catches from the fishery under assessment represent a small proportion of this (about 6% of US quota and 3% of ICCAT TAC).
		Y	<b>Dolphinfish</b> The 2004 SAFMC FMP for dolphin and wahoo fishery in the Atlantic and other measures implemented in the region to manage bycatch, represent a strategy for managing dolphinfish. Time series data do not indicate a decline in stock abundance or a decrease in mean size of individual fish (SAFMC, 1998). In addition, closure of a number of areas (including the FEC) to pelagic longline fisheries, implemented in 2001 is believed to have reduced the number of discarded dolphinfish (by 5%) between 1997-1999 and 2007-09. Circle hooks primarily introduced to the fishery to reduce sea turtle mortalities have proved to increase post-release survival chances for dolphinfish. A further amendment to set Annual Catch Limits (ACL) and Accountability measures (AM) for dolphinfish is currently being considered to meet requirements of the Magnuson-Stevens Reauthorization Act (MSRA) of 2006.
		Y	<b>Shortfin mako shark</b> The final Consolidated HMS FMP (NMFS, 2006) and Final Amendment 3 of the HMS FMP (NMFS, 2010b) represents a strategy for shortfin mako and provides a framework for implementation of management measures in response to stock status thresholds. Based on the results of the 2008 ICCAT stock assessment, NMFS determined that the North Atlantic shortfin mako sharks are not overfished but are approaching an overfished condition and are experiencing overfishing. However, as ICCAT did not recommend a TAC or mortality reduction to prevent overfishing of shortfin mako sharks, no quota or other limits to prevent overfishing were triggered under the FMP. US total catches of shortfin mako represent a small percentage of total Atlantic reported catches, therefore measures implemented within the domestic fleet will have limited impact upon the rebuilding potential of the North Atlantic stock. As a result of this and the lack of an ICCAT TAC, the final actions implemented by the 2010 Amendment 3 to the Consolidated HMS FMP in response

PI 2.1.1		The fishery does not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species	
SG	Issue	Met? (Y/N)	Justification/Rationale
			<p>to the status of this species, are to take action at the international level through international fishery management organizations to establish management measures to end overfishing of shortfin mako sharks, and to promote the live release of shortfin mako sharks in the domestic commercial and recreational shark fisheries.</p> <p>Promoting the release of shortfin mako sharks that are brought to the vessel alive could result in a reduction in shortfin mako shark mortality and thus, have long-term beneficial ecological impacts for this species.</p> <p>In addition, closed area measures implemented under the HMS FMP (including the FEC closure) demonstrably reduced discards of pelagic sharks by 48% between 1997-99 and 2005-09 (NMFS, 2010a).</p> <p>In comparison to the cumulative fishing mortality of North Atlantic shortfin mako sharks caused by other nations, as with other HMS stocks, the US contributes very little to mortality on this species in the North Atlantic because there is no directed U.S. commercial fishery; in 2010, US catches represented approximately 5.4% and 3.3% of total landings of this species in the North Atlantic and in the whole Atlantic respectively.</p>
100	a		There is a <b>high degree of certainty</b> that retained species are within biologically based limits <b>and</b> fluctuating around their target reference points.
		N	<b>Bigeye tuna</b> Although the assessment includes a number of sensitivity runs, taking into account uncertainty associated with three different abundance indices used in the assessments from the different fleets targeting this stock, and resulting estimates of B and F are within 80%CL (see 60a), there is not a high degree of certainty that the stock is within the limits.
		N	<b>Yellowfin tuna</b> does not meet this scoring issue, see 80b
		N	<b>Albacore tuna</b> does not meet this scoring issue, see 60a
		N	<b>Atlantic bluefin tuna</b> does not meet this scoring issue, see 60a
		N	<b>Dolphinfish</b> does not meet this scoring issue, see 60a
		N	<b>Shortfin mako shark</b> does not meet this scoring issue, see 60a
	b		Target reference points are defined for retained species.
		Y	<b>Bigeye tuna</b> Target reference points are defined both by ICCAT and NMFS for this species (See 60a).
		Y	<b>Yellowfin tuna</b> Target reference points are defined both by ICCAT and NMFS for this species (See 60a).
		Y	<b>Albacore tuna</b> Target reference points are defined both by ICCAT and NMFS for this species (See 60a).
		N	<b>Atlantic bluefin tuna</b> Target reference points are defined both by ICCAT and NMFS for this species (See 60a) but there are considerable uncertainties around these reference points.
		N	<b>Dolphinfish</b> A full stock assessment has not been carried out for dolphinfish and as a result target reference points have not been fully determined for both B and F.
		N	<b>Shortfin mako shark</b> MSST is not defined for northern stocks of shortfin mako by NMFS.
References		ICCAT (2011) Report of the Standing Committee on Research and Statistics for 2011. NMFS (1993) Fishery Management Plan for Sharks of the Atlantic Ocean. NMFS (2006) Final Consolidated Atlantic Highly Migratory Species Fishery Management Plan. NOAA, NMFS, Office of Sustainable Fisheries, Highly Migratory	

<b>PI 2.1.1</b>		<b>The fishery does not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species</b>	
<b>SG</b>	<b>Issue</b>	<b>Met? (Y/N)</b>	<b>Justification/Rationale</b>
			<p>Species Management Division, Silver Spring, MD. Public Document. pp. 1600.</p> <p>NMFS (2008) Final Amendment 2 to the Consolidated Atlantic HMS FMP. NOAA, NMFS, Office of Sustainable Fisheries, HMS Management Division, Silver Spring, MD. Public Document.</p> <p>NMFS (2010b) Final Amendment 3 to the Consolidated Atlantic Highly Migratory Species Fishery Management Plan. NOAA, NMFS, Office of Sustainable Fisheries, Highly Migratory Species Management Division, Silver Spring, MD. Public Document. pp. 632.</p> <p>NMFS (2011a) Stock Assessment and Fishery Evaluation Report for Atlantic Highly Migratory Species.</p> <p>NOAA, 2011 Annual Report of the United States of America.</p> <p>SAFMC (2003) Fishery and Management Plan for the dolphin and wahoo fishery of the Atlantic. 384 pp.</p> <p>Serafy et al. 2012</p> <p>SAFMC (2009) Fishery Ecosystem Plan of the South Atlantic Region. Available online:  <a href="http://www.safmc.net/ecosystem/Home/EcosystemHome/tabid/435/Default.aspx">http://www.safmc.net/ecosystem/Home/EcosystemHome/tabid/435/Default.aspx</a> </p>
<b>Bigeye tuna</b>			<b>90</b>
<b>Yellowfin tuna</b>			<b>90</b>
<b>Albacore tuna</b>			<b>90</b>
<b>Atlantic bluefin tuna</b>			<b>80</b>
<b>Dolphinfish</b>			<b>80</b>
<b>Shortfin mako shark</b>			<b>80</b>
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>			<b>80</b>
<b>CONDITION NUMBER (if relevant):</b>			<b>NA</b>

Evaluation Table: PI 2.1.2

PI 2.1.2		There is a strategy in place for managing retained species that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to retained species	
SG	Issue	Met? (Y/N)	Justification/Rationale
60	a		There are <b>measures</b> in place, if necessary, that are expected to maintain the main retained species at levels which are highly likely to be within biologically based limits, or to ensure the fishery does not hinder their recovery and rebuilding.
		Y	<p><b>Bigeye tuna, Yellowfin tuna, Albacore tuna, Atlantic bluefin tuna, Shortfin mako shark</b></p> <p>Measures are in place brought in under the 1999 FMP for Atlantic Tunas, Swordfish, and Sharks and updated under the Final Consolidated Atlantic HMS FMP (NMFS, 2006) and subsequent amendments (NMFS, 2008; 2010b) which comprise a strategy for managing all HMS species including all the main retained tuna and shark species listed above. In 1999, NMFS implemented a limited access permit program for pelagic longline vessels, initially directed at swordfish and shark fisheries, but which has subsequently resulted in a decrease in the number of vessels permitted to fish for Atlantic tunas by 70% since 1990 numbers. Other directed measures include dealer permit requirements and international trade permit requirements for <b>bigeye</b> and <b>bluefin</b> tuna.</p> <p>No ICCAT quotas currently apply to the US for bigeye or yellowfin tuna but minimum size limits are enforced for <b>bigeye</b> and <b>yellowfin</b> tuna which are over and above those prescribed by wider international management measures under ICCAT aimed at ensuring the fishery does not hinder the rebuilding of these species.</p> <p>In addition to permit limits, seasonal limits and a combination of size and quantities allowable per catch quantity of other species taken per trip are applied to control retention levels of <b>bluefin</b> tuna.</p> <p>Measures to limit <b>albacore</b> tuna catches in the US pelagic longline fishery were considered under the 2006 Final consolidated HMS FMP; due to low level of catches taken by the US Atlantic longline fleet, NMFS determined that measures required were establishment of foundations within ICCAT to develop an international rebuilding program; a rebuilding plan was established by ICCAT in 2009. US quota under this plan was 527t for 2010 and US total catches were below (~60% of) this; 2010 catches from longline vessels fishing in the areas within the unit of certification landed ~20% of this catch.</p> <p>Similarly, measures recently initiated for managing <b>shortfin mako</b> sharks include initiatives to address international rebuilding requirements under RFMO such as ICCAT, and to introduce promotion of live release of captured shortfin makos in commercial and recreational fisheries. Management measures implemented to address shark management in general include the requirement for fishermen to become certified at a Protected Species Safe Handling, Release and Identification workshop in order to apply for a permit to fish with longline.</p>
		Y	<p><b>Dolphinfish</b></p> <p>The SAFMC FMP for dolphin and wahoo fishery in the Atlantic (SAFMC, 2003) represents a strategy that provides a framework for the implementation of measures expected to maintain the species at levels within biologically based limits. Minimum size limits and a cap on US catch exist under this plan. Discards of dolphin fish have decreased since bycatch reduction measures were implemented in 1999, but to a lesser extent (5%) than other species.</p>
	b		The measures are considered <b>likely</b> to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).
		Y	<p><b>Bigeye tuna, Yellowfin tuna, Albacore tuna, Atlantic bluefin tuna, Shortfin mako shark, dolphinfish</b></p> <p>FMP for highly migratory species such as tunas and sharks and the measures in place within these plans are designed to meet the objectives of the MSFCMA, which is to 'manage fisheries to maintain optimum yield (OY) by rebuilding overfished fisheries and preventing overfishing' and are based on relevant theory</p>



PI 2.1.2		There is a strategy in place for managing retained species that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to retained species	
SG	Issue	Met? (Y/N)	Justification/Rationale
			and general experience. Selection of measures is carried out through consideration of a number of alternative measures, and respective impact analyses usually using data from the fishery and/or species in question. Similar processes and analyses are carried out under the SAFMC FMP for dolphin and wahoo.
80	a		There is a <b>partial strategy</b> in place, if necessary that is expected to maintain the main retained species at levels which are highly likely to be within biologically based limits, or to ensure the fishery does not hinder their recovery and rebuilding.
		Y	<b>Bigeye tuna, Yellowfin tuna, Albacore tuna, Atlantic bluefin tuna, Shortfin mako shark</b> The Final Consolidated Atlantic HMS FMP (NMFS, 2006) and subsequent amendments (NMFS, 2008; 2010b) comprise a strategy for managing all HMS species including all the main retained tuna and shark species listed above and is designed to manage fisheries to maintain optimum yield (OY) by rebuilding overfished fisheries and preventing overfishing. See more detail under 60a.
		Y	<b>Dolphinfish</b> The SAFMC FMP for dolphin and wahoo fishery in the Atlantic (SAFMC, 2003) represents a strategy that provides a framework for the implementation of measures expected to maintain the species at levels within biologically based limits. Annual catch limits and accountability measures for dolphinfish further support the strategy.
	b		There is some <b>objective basis for confidence</b> that the partial strategy will work, based on some information directly about the fishery and/or species involved.
		Y	<b>Bigeye tuna, yellowfin tuna, albacore tuna, Atlantic bluefin tuna, shortfin mako shark, dolphinfish</b> Before management measures are introduced and an amendment is made to the HMS or SAFMC FMP, a review is carried out to consider impacts of a variety of alternative measures to those already in place and to determine the anticipated effectiveness of a new measure. Data from the fishery and species involved are used to carry out the impact assessment analysis.
	c		There is <b>some evidence</b> that the partial strategy is being <b>implemented successfully</b> .
Y		<b>Bigeye tuna, yellowfin tuna, albacore tuna, Atlantic bluefin tuna, shortfin mako shark, dolphinfish</b> The pattern of amendments being drafted for the HMS FMP and the SAFMC FMP in response to changes in stock status of species covered by these plans, indicates that the management strategies for these stocks are being implemented successfully.	
100	a		There is a <b>strategy</b> in place for managing retained species.
		N	<b>Bigeye tuna, yellowfin tuna, albacore tuna, Atlantic bluefin tuna, shortfin mako shark, dolphinfish</b> The Final Consolidated Atlantic HMS FMP (NMFS, 2006) and subsequent amendments (NMFS, 2008; 2010b) comprise a strategy for managing all HMS species including all the main retained tuna and shark species. See 60a for more details. Similarly the SAFMC FMP for dolphin and wahoo fishery in the Atlantic (SAFMC, 2003) represents a strategy for managing dolphinfish. For example, a recent ‘Comprehensive Annual Catch Limit Amendment’ is currently under development (SAFMC, 2011) for dolphinfish amongst other species, aimed at meeting mandates of the MSA to establish Annual Catch Limits (ACLs) and Accountability Measures (AMs) for species managed by the Council that are not undergoing overfishing by the end of 2011. However, only the strategy for main species is considered, so the score cannot

PI 2.1.2		There is a strategy in place for managing retained species that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to retained species	
SG	Issue	Met? (Y/N)	Justification/Rationale
			reach 100 for this scoring issue.
	<b>b</b>		<b>Testing</b> supports <b>high confidence</b> that the strategy will work, based on information directly about the fishery and/or species involved.
		<b>N</b>	<b>Bigeye tuna, yellowfin tuna, albacore tuna, shortfin mako shark, dolphinfish</b> For all main retained species, development and selection of management measures to be implemented under the respective FMP is based on impact analyses (covering biological, economic and social effects) utilising data from the fishery and respective species, but predicted changes have not always provided high confidence that the measures will work. For example, analyses carried out for the Regulatory Amendment 1 to the 1999 HMS FMP predicted 11% increase in discards of bluefin tuna as a result of measures brought in to reduce bycatch in the PLL fishery between reference periods. Although testing predicted pelagic shark species would decline by about 50%, these predictions were for all pelagic species.
	<b>c</b>		There is <b>clear evidence</b> that the strategy is being <b>implemented successfully</b> .
		<b>N</b>	<b>Bigeye tuna, yellowfin tuna, albacore tuna, Atlantic bluefin tuna, shortfin mako shark, dolphinfish</b> The pattern of amendments being drafted for the HMS FMP in response to changes in stock status of species covered by these plans, indicates that the management strategies for these stocks are being implemented successfully. Access limits have reduced the numbers of vessels by about 50% since 1999; the fishery has remained within the quotas for albacore tuna and pelagic sharks; where measures have not worked (e.g. overages in the bluefin tuna quotas) alternative measures or adaptations to process have been implemented to tackle issues (e.g. alterations to timing of incorporation of dead discards). However, only the strategy for main species is considered, so the score cannot reach 100 for this scoring issue.
	<b>d</b>		There is some <b>evidence</b> that the strategy is <b>achieving its overall objective</b> .
		<b>N</b>	<b>Bigeye tuna, yellowfin tuna, albacore tuna, shortfin mako shark, dolphinfish</b> The combined effects of the individual area closures and gear restrictions brought in to reduce bycatch in the PLL fishery were examined by comparing the reported catch and discards from 2005-2010 to the averages for 1997-1999 throughout the entire U.S. Atlantic fishery. Percent changes in reported numbers of fish caught and discarded were compared to the predicted changes from the analyses in Regulatory Amendment 1 to the 1999 FMP (NMFS, 2000). Declines were noted for both the numbers of kept and discards of almost all species examined including swordfish, tunas, sharks. The numbers of kept and discarded <b>bigeye tuna</b> have decreased by 50% and 70% respectively and the numbers of kept and discarded <b>yellowfin tuna</b> have decreased by 39% and 40% respectively between the two periods. Dolphinfish numbers kept increased by 7.5% between the two periods, but discarded numbers decreased by ~16%. No specific information regarding discards of <b>albacore</b> are available, but US catches have been well within the quota limits imposed by the ICCAT rebuilding plan in 2009. Pelagic shark (which include shortfin mako sharks) numbers kept and discarded have decreased 18% and 40% respectively between the two periods. However, only the strategy for main species is considered, so the score cannot reach 100 for this scoring issue.
		<b>N</b>	<b>Bluefin tuna</b> does not meet this scoring issue, because closures brought in to reduce bycatch of other species within the longline fishery, led to increases in kept and discarded numbers of bluefin between 1999 and 2009. The reported number of BFT kept increased by 63.7% for 2005-2010 compared to 1997-1999 and the

<b>PI 2.1.2</b>		<b>There is a strategy in place for managing retained species that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to retained species</b>	
<b>SG</b>	<b>Issue</b>	<b>Met? (Y/N)</b>	<b>Justification/Rationale</b>
			number of reported discards of BFT increased by about 36% over the same time period, which is more than triple the 11% percent increase predicted from the analyses in Regulatory Amendment.
<b>References</b>			<p>ICCAT (2011) Report of the Standing Committee on Research and Statistics for 2011.</p> <p>NMFS (1993) Fishery Management Plan for Sharks of the Atlantic Ocean.</p> <p>NMFS (2006) Final Consolidated Atlantic Highly Migratory Species Fishery Management Plan. NOAA, NMFS, Office of Sustainable Fisheries, Highly Migratory Species Management Division, Silver Spring, MD. Public Document. pp. 1600.</p> <p>NMFS (2008) Final Amendment 2 to the Consolidated Atlantic HMS FMP. NOAA, NMFS, Office of Sustainable Fisheries, HMS Management Division, Silver Spring, MD. Public Document.</p> <p>NMFS (2010b) Final Amendment 3 to the Consolidated Atlantic Highly Migratory Species Fishery Management Plan. NOAA, NMFS, Office of Sustainable Fisheries, Highly Migratory Species Management Division, Silver Spring, MD. Public Document. pp. 632.</p> <p>NMFS (2011a) Stock Assessment and Fishery Evaluation Report for Atlantic Highly Migratory Species.</p> <p>NOAA, 2010</p> <p>NOAA, 2011 Annual Report of the United States of America. ICCAT</p> <p>SAFMC (2003) Fishery and Management Plan for the dolphin and wahoo fishery of the Atlantic. 384 pp.</p> <p>SAFMC (2009) Fishery Ecosystem Plan of the South Atlantic Region. Available online:  <a href="http://www.safmc.net/ecosystem/Home/EcosystemHome/tabid/435/Default.aspx">http://www.safmc.net/ecosystem/Home/EcosystemHome/tabid/435/Default.aspx</a> </p>
<b>Bigeye tuna</b>			<b>95</b>
<b>Yellowfin tuna</b>			<b>95</b>
<b>Albacore tuna</b>			<b>95</b>
<b>Atlantic bluefin tuna</b>			<b>90</b>
<b>Dolphinfish</b>			<b>95</b>
<b>Shortfin mako shark</b>			<b>95</b>
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>			<b>80</b>
<b>CONDITION NUMBER (if relevant):</b>			<b>NA</b>

Evaluation Table: PI 2.1.3

PI 2.1.3		Information on the nature and extent of retained species is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage retained species	
SG	Issue	Met? (Y/N)	Justification/Rationale
60	a		<b>Qualitative information</b> is available on the amount of main retained species taken by the fishery.
		Y	<b>Bigeye tuna, yellowfin tuna, albacore tuna, Atlantic bluefin tuna, shortfin mako shark, dolphinfish</b> Quantitative information is available on the amount of all of the main retained species taken by the fishery. Data are available from vessel logbooks of landings by weight (DLS), catch and release fate by numbers from both vessel logbooks (FLS) and the pelagic observer programme (POP).
	b		Information is <b>adequate to qualitatively</b> assess outcome status with respect to biologically based limits.
		Y	<b>Bigeye tuna, yellowfin tuna, albacore tuna, Atlantic bluefin tuna, shortfin mako shark, dolphinfish</b> For all main retained species, information is adequate to qualitatively and quantitatively assess the impact the fishery on outcome status compared with impacts from other fisheries impacting the stocks. Catch data for both the longline and handline buoy gear fisheries are available from three sources: <ul style="list-style-type: none"> <li>- dressed weight in pounds landed from the fishery as recorded by dealers (Dealer Logbook System (DLS) data base)</li> <li>- number of fish and protected species caught in the pelagic fishery in the reporting areas of the unit of certification as recorded by fishermen in log books (Fisheries Logbook Systems (FLS) database)</li> <li>- numbers of species caught as recorded by observers deployed by the NMFS pelagic observer programme (POP database).</li> </ul> Reporting of total landed catches (through DLS data) of main retained species enables the proportion of total Atlantic catches from the fishery to be estimated. All tuna and shark data are reported to ICCAT and contribute to Atlantic-wide stock assessments. Data reported for dolphinfish are used by SAFMC to assess impacts of the US fishery on the Atlantic stocks
	c		Information is adequate to support <b>measures</b> to manage <b>main</b> retained species.
		Y	<b>Bigeye tuna, yellowfin tuna, albacore tuna, Atlantic bluefin tuna, shortfin mako shark, dolphinfish</b> Information from the fishery is adequate to support management measures in place under the HMS FMP (for tuna and shark species) and the SAFMC FMP (for dolphinfish) which represent strategies for managing these species. Both vessel FLS and observer POP data are used to monitor the fate of main retained species and allow estimates of total mortality resulting from the fishery to be made. POP, Vessel logbook data (DLS and FLS data) are frequently used by NMFS in analyses and simulations carried out to determine potential impacts of future actions during the consultation process of any amendment to an FMP.
80	a		<b>Qualitative information</b> and <b>some quantitative information</b> are available on the amount of main retained species taken by the fishery.
		Y	Quantitative information is available on the amount of all of the main retained species taken by the fishery. Data are available from vessel logbooks of landings by weight (DLS), catch and release fate by numbers from both vessel logbooks (FLS) and the pelagic observer programme (POP).
	b		Information is <b>sufficient to estimate</b> outcome status with respect to biologically based limits.

PI 2.1.3		Information on the nature and extent of retained species is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage retained species	
SG	Issue	Met? (Y/N)	Justification/Rationale
		Y	<p><b>Bigeye tuna, yellowfin tuna, albacore tuna, Atlantic bluefin tuna, shortfin mako shark, dolphinfish</b></p> <p>Information is available for bigeye, yellowfin, albacore, bluefin tuna and shortfin mako to enable quantitative assessments to be made with respect to biologically based limits, although with varying degrees of uncertainty in the outputs (see 2.1.1). ICCAT and other quantitative assessments for these species provide probabilities associated with the certainty of model outcomes (ICCAT, 2010)</p> <p>Although only an 'exploratory' stock assessment using a surplus production model has been conducted to date for dolphinfish; life history estimates from this assessment suggest this species may be able to withstand a relatively high exploitation rates and estimated stock status was estimated to be above BMSY.</p>
	c		Information is adequate to support a <b>partial strategy</b> to manage <b>main</b> retained species.
		Y	<p><b>Bigeye tuna, yellowfin tuna, albacore tuna, Atlantic bluefin tuna, shortfin mako shark, dolphinfish</b></p> <p>Information from the fishery is adequate to support management measures in place under the HMS FMP (for tuna and shark species) and the SAFMC FMP (for dolphinfish) which represent strategies for managing these species.</p> <p>Both vessel FLS and observer POP data are used to monitor the fate of main retained species and allow estimates of total mortality resulting from the fishery to be made. POP, Vessel logbook data (DLS and FLS data) are frequently used by NMFS in analyses and simulations carried out to determine potential impacts of future actions during the consultation process of any amendment to an FMP. The objectives of the POP are to:</p> <ul style="list-style-type: none"> <li>- Obtain target and bycatch numbers on pelagic species caught on longline gear.</li> <li>- Record length measurements and sex on all pelagic species brought on board. (swordfish, tunas, billfish, sharks, other finfish and protected species)</li> <li>- Record detailed gear characteristics of commercial longline vessels.</li> </ul> <p>The information collected is used by NMFS to evaluate harvest levels and the status of pelagic fish stocks as well as the effectiveness of management measures to control harvest levels.</p>
	d		Sufficient data continue to be collected to detect any increase in risk level (e.g. due to changes in the outcome indicator score or the operation of the fishery or the effectiveness of the strategy)
		y	<p><b>Bigeye tuna, yellowfin tuna, albacore tuna, Atlantic bluefin tuna, shortfin mako shark, dolphinfish</b></p> <p>Data collected by the POP allow estimates of total mortality of species to be generated; these data have been used to monitor quota and catch limits and to provide mortality estimates from the US Atlantic longline fishery to be incorporated into ICCAT assessments. Target coverage levels are designed to be sufficient to meet precision requirements for monitoring of ETP species across the entire US Atlantic pelagic longline fleet. The fishery interacts with ETP species at lower rates than for most retained species, therefore observer coverage levels should be sufficient to detect increases in risk level to these species.</p>
100	a		Accurate and verifiable information is available on the catch of all retained species and the consequences for the status of affected populations.
		N	<p>Although significant amounts of information are available from the fishery for retained species, this is not always accurate and verifiable across all data sets and for all retained species. Information is generally very good for species which are secondary target species of high value; but the level of detail in vessel data is lower for other less valued retained species.</p> <p>For example there are differences in the level of taxonomic resolution in species codes used amongst DLS and FLS and between these two data sets and observer data (POP). For example, in some case generic species group codes are used by vessels and by observers when there have been uncertainties in the identification of a species caught (e.g mako sharks (MAD/MAK) or shortfin (SFM) or longfin (LFM))</p>

PI 2.1.3		Information on the nature and extent of retained species is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage retained species	
SG	Issue	Met? (Y/N)	Justification/Rationale
			mako sharks). This can complicate the utility of the data sets for estimating total mortalities at a species level. Discrepancies also occur between the fate of species reported by vessels and observer data, which in some instances might relate to issues mentioned above with species codes, less detailed reporting in vessel logbooks compared with observer logbooks, or the level of observer coverage in the fishery.
	b		Information is <b>sufficient to quantitatively</b> estimate outcome status with a <b>high degree of certainty</b> .
		N	<b>Bigeye tuna, yellowfin tuna, albacore tuna, Atlantic bluefin tuna, shortfin mako shark, dolphinfish</b> Information is not sufficient to quantitatively estimate outcome status with a high degree of certainty for any of the main retained species. This is primarily a result of the lack of information from other fisheries in the Atlantic impacting stocks of these species (e.g., for bigeye, yellowfin, albacore and bluefin tuna). Although this may also be true for shortfin mako and dolphinfish, stock assessments for these two species have also not yet been fully developed.
	c		Information is adequate to support a <b>comprehensive strategy</b> to manage retained species, and evaluate with a <b>high degree of certainty</b> whether the strategy is achieving its objective.
		N	<b>Bigeye tuna, yellowfin tuna, albacore tuna, Atlantic bluefin tuna, shortfin mako shark, dolphinfish</b> See 100 a and b.
	d		Monitoring of retained species is conducted in sufficient detail to assess ongoing mortalities to all retained species.
		N	<b>Bigeye tuna, yellowfin tuna, albacore tuna, Atlantic bluefin tuna, shortfin mako shark, dolphinfish</b> See 100 b.
	References		DLS, FLS and POP data acquired from SEFSC, NMFS. NMFS (2006) Final Consolidated Atlantic Highly Migratory Species Fishery Management Plan. NOAA, NMFS, Office of Sustainable Fisheries, HMS Management Division, Silver Spring, MD. Public Document. pp. 1600. NMFS (2008) Final Amendment 2 to the Consolidated Atlantic HMS FMP. NOAA, NMFS, Office of Sustainable Fisheries, HMS Management Division, Silver Spring, MD. Public Document. Prager, 2000 SAFMC (2003) Fishery and Management Plan for the dolphin and wahoo fishery of the Atlantic. 384 pp
Bigeye tuna			80
Yellowfin tuna			80
Albacore tuna			80
Atlantic bluefin tuna			80
Dolphinfish			80
Shortfin mako shark			80
OVERALL PERFORMANCE INDICATOR SCORE:			80
CONDITION NUMBER (if relevant):			NA

Evaluation Table: PI 2.2.1

PI 2.2.1		The fishery does not pose a risk of serious or irreversible harm to the bycatch species or species groups and does not hinder recovery of depleted bycatch species or species groups	
SG	Issue	Met? (Y/N)	Justification/Rationale
60	a		Main bycatch species are <b>likely</b> to be within biologically based limits (if not, go to scoring issue b below).
		N, but see b	<b>Blue marlin, white marlin/roundscale spearfish, west Atlantic sailfish</b> The biomass of all of the four species of billfish caught as bycatch by the U.S. Atlantic pelagic longline fishery is considered by ICCAT SCRS to be lower than BMSY. The ratios of Bcurr/Bmsy for blue marlin, white marlin, and sailfish are > 0.75, not estimated, and 0.67, respectively. There is considerable uncertainty in the assessments for these species, due to reporting of unclassified billfish catches to ICCAT from other (non-U.S.) fleets, suspected underreporting of sailfish that are caught as bycatch and a lack of catch data from increasingly important artisanal fleets. For white marlin, additional complications related to the recent determination of round scale spearfish as a separate species. Previous reporting of this species as white marlin means that estimates of biological and population parameters may not accurately represent white marlin. NMFS has designated blue marlin, white marlin and west Atlantic sailfish as overfished stocks and that overfishing is occurring on each of these stocks. These species are therefore not likely to be within biologically based limits.
		Y	<b>Blue shark</b> Although the results of the latest stock assessment are highly uncertain, the biomass of the north Atlantic blue shark stock is believed to be above that which would support MSY and current harvest levels are below $F_{MSY}$ . Results of the assessment (Anon. 2009c) were conditional on the assumptions made (e.g., estimates of historical catches and effort, the relationship between catch rates and abundance, the initial state of the stock in the 1950s, and various life-history parameters), but most models consistently predicted that blue shark stocks in the Atlantic are not over-fished and that over-fishing is not occurring.
		N, but see b	<b>Scalloped hammerhead (previously LCS),</b> Based on the results of an independent assessment carried out in 2009, in 2011 NMFS determined that <b>scalloped hammerhead</b> sharks were overfished and experiencing overfishing.
		n/a, but see c	<b>Night shark, Longfin mako shark, Bigeye thresher</b> See 60 c below.
		Y	<b>Pelagic ray</b> This species is one of the most productive of the live-bearing elasmobranchs with an annual rate of increase of 31% and therefore has a higher capacity to withstand fishing pressure. There are no data to suggest that significant declines have occurred in this species and it is currently Least concern on the IUCN red list status and is therefore considered likely to be within biologically based limits.
	b		If main bycatch species are outside biologically based limits there are mitigation <b>measures</b> in place that are <b>expected</b> to ensure that the fishery does not hinder recovery and rebuilding.
		Y	<b>Blue marlin, white marlin/roundscale spearfish, west Atlantic sailfish</b> As required by the MSFCMA, the U.S. HMS FMP represents a strategy which includes measures to 'end overfishing and to rebuild affected stocks' of all species impacted by US fisheries. In addition, the HMS FMP specifically incorporates a bycatch reduction plan aimed at 'reducing bycatch to the maximum extent practicable'. Measures employed which are specifically aimed at reducing impacts on billfish include prohibition of commercial possession and sale of Atlantic billfish, provision of training and gear for de-hooking to improve survival chances of released fish and recreational minimum sizes and trip limits. Additional measures

PI 2.2.1		The fishery does not pose a risk of serious or irreversible harm to the bycatch species or species groups and does not hinder recovery of depleted bycatch species or species groups	
SG	Issue	Met? (Y/N)	Justification/Rationale
			include closed areas and use of circle hooks have also been implemented to benefit a number different bycatch species. ICCAT data show that the catch of blue marlin, white marlin, and sailfish occurs primarily off South America for all three species and in the Gulf of Mexico for blue and white marlin. Therefore, the low proportion of total harvest combined with the management measures to minimize catch and discards demonstrates that the fishery is unlikely to hinder recovery or rebuilding of the billfish stocks. Estimates of total discards are monitored by NMFS using observed discards (POP data) multiplied by effort (hooks) from vessel data; estimates of discard mortality are also considered.
		n/a	<b>Blue sharks</b> Blue sharks are estimated to be within biologically based limits, see 60a.
		Y	<b>Scalloped hammerhead (previously LCS)</b> Due to the recent update (in April 2011) of scalloped hammerhead shark status to overfished and experiencing overfishing, NMFS has begun to take action to end or prevent overfishing in the fishery and to implement conservation and management measures to rebuild overfished stocks through Amendment 5 to the HMS FMP (2011). NMFS has committed to take action to end or prevent overfishing in the fishery and implement conservation and management measures to rebuild overfished stocks within 2 years (76 FR 23794; April 28, 2011). The process is ongoing and a number of alternative measures are under consideration as part of a rebuilding plan for this species. In the meantime, the general measures to reduce HMS bycatch are in place to prevent the fishery from hindering recovery. In 2010, ICCAT developed recommendations 10–07 and 10–08, which specifically prohibit the retention, transshipping, landing, sorting, or selling of hammerhead sharks, other than bonnethead sharks, caught in association with ICCAT fisheries.
		n/a, but see c	<b>Night shark, Longfin mako shark, Bigeye thresher</b>
		n/a	<b>Pelagic stingray</b> Pelagic stingrays are considered to be within biologically based limits, see 60a.
	c		If the status is poorly known there are measures or practices in place that are expected to result in the fishery not causing the bycatch species to be outside biologically based limits or hindering recovery.
		n/a	<b>blue marlin, white marlin/roundscale spearfish, west Atlantic sailfish, blue shark, pelagic rays</b> n/a see 60 a.
		Y	<b>Night shark, Longfin mako shark, Bigeye thresher</b> Quantitative biological information (e.g., age, growth, longevity, age-at-maturity) for night shark stocks off the US east coast and Gulf of Mexico are lacking, and this has prevented the development of any type of demographic models to predict the productivity of the stock. A status review of this species has indicated that night sharks have intrinsic rates of increase (r) about 10% per year and have moderate rebound potential and an intermediate generation time compared to other sharks. Because of the current lack of biological data for the night shark and its rarity in surveys, it is listed as a Prohibited Species as a precautionary measure until a more comprehensive stock assessment can be conducted. Vessels using/carrying PLL gear are prohibited from retaining this species at any time. Information for stock assessment is similarly lacking for longfin mako and bigeye thresher sharks, and both have also been listed as Prohibited Species since 1999 as precautionary measures to reduce impacts of the fishery on the stocks. These species are covered by the HMF bycatch reduction plan that has measures in place to minimize bycatch of sharks and other species.
		n/a	<b>Scalloped hammerhead shark</b>



PI 2.2.1		The fishery does not pose a risk of serious or irreversible harm to the bycatch species or species groups and does not hinder recovery of depleted bycatch species or species groups	
SG	Issue	Met? (Y/N)	Justification/Rationale
			See 60b
80	a		Main bycatch species are <b>highly likely</b> to be within biologically based limits (if not, go to scoring issue b below).
		N, but see b	<b>Blue marlin, white marlin/roundscale spearfish, west Atlantic sailfish</b> Billfish species are all outside of biologically based limits. (See 60a for more detail)
		Y	<b>Blue shark</b> Blue sharks are estimated to be within biologically based limits. Even though the levels of uncertainty around these estimates are high due to the data availability, Fcurr/Fmsy is far below 1, indicating that the probability of falling below any sort of Blim is small.
		N, but see b	<b>Night shark</b> A status review of night shark was carried out in 2008, and concluded that the species should no longer be considered as a species of concern based on analysis of all currently available information (landings data, catch size, intrinsic rates of increase and rebound potential and analysis of relative abundance trends). However, due to conflicting trends in relative abundance and catch, and the lack of a full assessment, this species cannot be considered to be highly likely to be within biologically based limits.
		N, but see b	<b>Longfin mako shark, Bigeye thresher</b> Information for stock assessment (e.g., age, growth, longevity, age-at-maturity) is lacking for longfin mako and bigeye thresher sharks, hence it is not currently feasible to determine whether these species are highly likely to be within biologically based limits
		N, but see b	<b>Scalloped hammerhead shark</b> This species is determined as overfished and experiencing overfishing by NMFS.
		Y	<b>Pelagic stingray</b> No stock assessments have been carried out for pelagic stingrays in the North Atlantic; however, an ecological risk assessment (PSA) demonstrates that the pelagic stingray is at low risk from Atlantic longline fisheries in general and the least vulnerable of several elasmobranch analysed by SCRS; therefore we conclude that it is highly likely to be within biologically based limits. This species is one of the most productive of the live-bearing elasmobranchs; its annual rate of increase of 31% is more than triple that of some of the Threatened oceanic sharks and rays.
	b		If main bycatch species are outside biologically based limits there is a <b>partial strategy of demonstrably effective</b> mitigation measures in place such that the fishery does not hinder recovery and rebuilding.
		Y	<b>Blue marlin, white marlin/roundscale spearfish, west Atlantic sailfish</b> Billfish main bycatch species are all managed under the HMS FMP which represents a strategy including measures to 'end overfishing and to rebuild affected stocks' of all species impacted by US fisheries. In addition, the HMS FMP specifically incorporates a bycatch reduction plan aimed at 'reducing bycatch to the maximum extent practicable'. Measures brought in to address the status of bycatch and overfished stocks include (* represent those currently in use): 1. Gear Modifications (including hook and bait types)* 2. Circle Hooks* 3. Time/Area Closures* 4. Performance Standards 5. Education/Outreach* 6. Effort Reductions (i.e., Limited Access)* 7. Full Retention of Catch 8. Use of De-hooking Devices (mortality reduction only)*

PI 2.2.1		The fishery does not pose a risk of serious or irreversible harm to the bycatch species or species groups and does not hinder recovery of depleted bycatch species or species groups	
SG	Issue	Met? (Y/N)	Justification/Rationale
			<p>These measures have proved to be demonstrably effective in reducing discards in the US Atlantic pelagic longline fishery by 60%, 60% and ~70% for blue marlin, white marlin and sailfish respectively between the two periods 1997-99 and 2005-09.</p> <p>Increases in post release survival have been reported for circle hooks compared with J-type hooks for blue marlin and sailfish.</p>
		Y	<p><b>Blue shark</b></p> <p>Blue shark are managed as part of the pelagic shark complex under HMS FMPs (1993, 1999) which represent a strategy including measures to 'end overfishing and to rebuild affected stocks' of all species impacted by US fisheries. In 1999 a separate quota was implemented for blue sharks as part of the total pelagic shark quota; the quotas have kept harvest at levels sufficient to prevent overfishing. In addition, the HMS FMP specifically incorporates a bycatch reduction plan aimed at 'reducing bycatch to the maximum extent practicable'. These measures (see above under 80b rationale for billfish species) have proved to be demonstrably effective in reducing discards of pelagic sharks by 42%, between the two periods 1997-99 and 2005-09.</p>
		Y	<p><b>Night shark, longfin mako shark, bigeye thresher shark</b></p> <p>In 1993 The Fishery Management Plan for Sharks (NMFS 1993) was developed for the management of shark populations in waters of the U.S. Atlantic and Gulf of Mexico. Because species-specific catch and life history information was limited, sharks were grouped and managed under three categories: large coastal (LCS), small coastal (SCS), and pelagic (PS); this was done based on known life history, habitat, market, and fishery characteristics (NMFS 1993). Night sharks come under the LCS group; longfin mako and bigeye thresher are considered under PS. Under the revised FMP of the Atlantic tunas, swordfish and sharks (NMFS 1999), NMFS further prohibited the retention of 19 species of sharks including night sharks, longfin mako and bigeye thresher sharks based on a precautionary approach for species with little or no biological information and thought to be highly susceptible to overexploitation. The December 24, 2003, Amendment 1 to the FMP for Atlantic tunas, swordfish and sharks also prohibits retention of night sharks. Management measures enacted in that amendment also included: modifying the commercial quotas, eliminating the commercial minimum size restrictions, establishing regions and trimester seasons for LCS and SCS management units, imposing gear restrictions to reduce bycatch, and a time/area closure off the coast of North Carolina effective January 1, 2005.</p> <p>The FMP and associated Amendments represent a strategy for the management of bycatch in general and a partial strategy to manage specific species, in that many of the shark species caught as bycatch are managed as species complex/groups, due to the limited information available by species to carry out stock assessments. Since measures were implemented under the FMP in 1999, there have been reported declines (~88%) in numbers of LCS kept from 1997-1999 to 2005-2010, more than the predicted values developed for Regulatory Amendment 1. The number of LCS discards remained almost unchanged between these two periods. Reported discards of PS have also declined more than the predicted values by 42%, between the two periods 1997-99 and 2005-10 and numbers of pelagic sharks kept have declined by 18%.</p>
		Y	<p><b>Scalloped hammerhead shark</b></p> <p>Scalloped hammerhead and other hammerhead sharks are prohibited from retention by pelagic longline vessels. Other management measures specific to scalloped hammerhead sharks are currently in development following a 2011 determination by NMFS that the species is overfished and undergoing overfishing. In addition to the hammerhead prohibition, there are measures in place for shark catches that have been demonstrably successful in reducing catch and discard for</p>

PI 2.2.1		The fishery does not pose a risk of serious or irreversible harm to the bycatch species or species groups and does not hinder recovery of depleted bycatch species or species groups	
SG	Issue	Met? (Y/N)	Justification/Rationale
			other shark and billfish species (see above under 80b rationale for billfish species).
		NA	Pelagic stingray
100	a		There is a <b>high degree of certainty</b> that bycatch species are within biologically based limits.
		N	<b>Blue marlin, white marlin/roundscale spearfish, west Atlantic sailfish</b> Billfish species are all outside of biologically based limits. (See 60a for more detail)
		N	<b>Blue shark</b> There is not a high degree of certainty that blue shark stocks in the north Atlantic are within biologically based limits. See 80a for more detail.
		N	<b>Night shark, longfin mako sharks, bigeye thresher sharks, scalloped hammerhead sharks</b> There is not a high degree of certainty that these shark species are within biologically based limits, see 60 c and 80a for more details.
		N	<b>Pelagic rays</b> A PSA does not constitute a high degree of certainty.
References		(Anon. 2009c) blue shark assessment NMFS (2011a) Stock Assessment and Fishery Evaluation Report for Atlantic Highly Migratory Species. Serafy et al, 2009; Serafy et al 2012 Cortes et al. 2008; Carlson J.K., Cortes, E., Neer, J.A., Mccandless, C.T. and L.R. Beerkircher (2008) The Status of the United States Population of Night Shark, <i>Carcharinus signatus</i> . Marine Fisheries Review 70 (1):1-13 (Anon. 2009c) blue shark assessment NMFS (2011a) Stock Assessment and Fishery Evaluation Report for Atlantic Highly Migratory Species. Serafy et al, 2009; Serafy et al 2012  NOAA 2011b. Endangered and Threatened Wildlife; 90-Day Finding on a Petition To List the Scalloped Hammerhead Shark as Threatened or Endangered Under the Endangered Species Act. Federal Register: Vol. 76, No. November 28, 2011.	
Blue marlin			80
white marlin/roundscale spearfish			80
West Atlantic sailfish			80
Blue shark			80
Pelagic rays			80
Longfin mako			80
Scalloped hammerhead			80
Bigeye thresher			80
Night shark			80
OVERALL PERFORMANCE INDICATOR SCORE:			80
CONDITION NUMBER (if relevant):			NA

Evaluation Table: PI 2.2.2

PI 2.2.2		There is a strategy in place for managing bycatch that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to bycatch populations	
SG	Issue	Met? (Y/N)	Justification/Rationale
60	a		There are <b>measures</b> in place, if necessary, which are expected to maintain main bycatch species at levels which are highly likely to be within biologically based limits or to ensure that the fishery does not hinder their recovery.
		Y	<b>Blue marlin, white marlin/roundscale spearfish, west Atlantic sailfish</b> As all of the billfish main bycatch species are outside of biological limits, measures have been implemented under the HMS FMP to ensure that the US fishery does not hinder their recovery. These measures included a prohibition on the sale of Atlantic billfish and on the possession of Atlantic billfish by commercial longline vessels.
		Y	<b>Blue shark</b> Measures in place under the 1999 FMP for Atlantic tunas, swordfish and sharks. that are expected to maintain blue sharks within biologically based limits include a specific quota that was introduced for this species within the pelagic shark quota (also covering shortfin mako and porbeagle sharks) and a reduction in the recreational bag limit to 1 Atlantic shark per vessel per trip, with a minimum size of 137 cm fork length for all sharks. Pelagic shark quotas were enacted in 2001 and the current commercial quota for pelagic shark is 273 mt dw.
		Y	<b>Night, Longfin mako, bigeye thresher, scalloped hammerhead sharks</b> In 1999, the U.S. FMP for Atlantic Tunas, Swordfish, and Sharks (NMFS 1999) implemented measures allowing retention of only those shark species known or expected to be able to withstand specified levels of fishing mortality. This led to a list of 19 prohibited shark species, including night shark, bigeye thresher shark and longfin mako shark. ICCAT passed conservation measures in 2010 recommending prohibition of retention of scalloped hammerhead sharks. The US has added hammerheads to the prohibited species list for Pelagic longline vessels. A species specific quota is proposed for shark fisheries in the U.S. based on assessment results. Additional management measures were implemented under Amendment 1 of this FMP for Atlantic Tunas, Swordfish and Sharks in 2003 to provide further protection for vulnerable shark species. (See 2.2.1 80b for more details)
		Y	<b>Pelagic stingray</b> Bycatch reduction plan implemented under the consolidated HMS FMP and subsequent amendments include measures aimed at minimising impacts of the fishery on bycatch.
	b		The measures are considered <b>likely</b> to work, based on plausible argument (e.g. general experience, theory or comparison with similar fisheries/species).
		Y	<b>Blue marlin, white marlin/roundscale spearfish, west Atlantic sailfish, blue shark</b> The HMS FMP and the measures implemented through these plans are designed to meet the objectives of the MSFCMA, which is to 'manage fisheries to maintain optimum yield (OY) by rebuilding overfished fisheries and preventing overfishing' and are based on relevant theory and general experience or data from the fishery itself. Analysis by NMFS in amendments to HMS management plans demonstrates expectation that the measures will work.
		Y	<b>Night shark, longfin mako, bigeye thresher, scalloped hammerhead sharks</b> Prohibited retention, in addition to other measures to minimize HMS bycatch, should be effective for conservation of species such as <b>bigeye thresher</b> , which has the lowest estimated productivity among all shark species (Cortes et al., 2008), is relatively easily recognized, typically caught in low quantities and is likely to have a high discard survival. The measures are also likely to work for <b>longfin mako</b> sharks which are caught in similarly low numbers and appear to have similar discard survival rates to bigeye

PI 2.2.2		There is a strategy in place for managing bycatch that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to bycatch populations	
SG	Issue	Met? (Y/N)	Justification/Rationale
			<p>thresher in the fishery under assessment (~50% of observed discards are discarded dead, 17-18% of reported discards are discarded dead). There have been issues with identification of longfin and shortfin mako sharks, but this is somewhat mitigated by recent recommendations brought in by NMFS under the FMP Amendment 3 (2010) to voluntarily release pre-reproductive shortfin mako live due to its status as undergoing overfishing.</p> <p>These measures may be less effective for <b>night shark</b>, which appear to suffer relatively higher discard mortalities, 70% of observed discards were discarded dead in the fishery under assessment, and 43% were reported as discarded dead in vessel logbooks. Night sharks are also difficult to identify. However, landings data have provided corroborative evidence that the prohibited status of night sharks has reduced harvesting of the species since 2002. Therefore, unless there is a major change in pelagic fishing effort or in the species population migratory patterns, the current protection should ensure the species does not suffer any increased reduction in population size.</p> <p>Due to issues of identifying <b>scalloped hammerhead sharks</b> from other hammerhead shark species caught in PLL fisheries, all hammerhead species have been added to the prohibited species.</p>
		Y	<p><b>Pelagic stingray</b></p> <p>Closed areas within the PLL brought in to reduce bycatch of swordfish helped to reduce effort within the PLL fishery. Circle hooks primarily introduced to the fishery to reduce sea turtle mortalities have recently been shown to produce lower catch rates of pelagic stingrays in similar fisheries in the equatorial western Atlantic.</p>
80	a		There is a <b>partial strategy</b> in place, if necessary, for managing bycatch species at levels which are highly likely to be within biologically based limits or to ensure that the fishery does not hinder their recovery.
		Y	<p><b>Blue marlin, white marlin/roundscale spearfish, west Atlantic sailfish,</b></p> <p>The HMS FMP under which these species are managed, represent a strategy for managing bycatch species – see 100a for more details. Area closures introduced as part of the NMFS bycatch reduction plan were primarily designed to reduce interactions with juvenile target species and billfish species.</p>
		Y	<p><b>Blue shark</b></p> <p>Specific blue shark quotas were implemented through the 1999 HMS FMP. Blue shark are managed under the pelagic shark complex of the Fishery Management Plan for Sharks, which undergoes periodic updates. Together, the quotas and management plan represent a partial strategy for managing this species.</p>
		Y	<p><b>Night shark, longfin mako, bigeye thresher</b></p> <p>In 1993 The Fishery Management Plan for Sharks (NMFS 1993) was developed for the management of shark populations in waters of the U.S. Atlantic and Gulf of Mexico. Under this plan, sharks were grouped and managed under three categories: large coastal (LCS), small coastal (SCS), and pelagic (PS) based on known life history, habitat, market, and fishery characteristics (NMFS 1993). The Atlantic tunas, swordfish, and shark FMP and its amendments and the Atlantic Billfish FMP and its amendments were consolidated in 2006 into the Consolidated Atlantic HMS FMP (NMFS 2006). Measures have been implemented under this management plan either to address management concerns at species group level or for specific species as and when information becomes available.</p> <p>As night shark, longfin mako and bigeye thresher sharks continue to be managed within species groups (i.e. LCS and PS), we consider the HMS FMP to be a partial strategy for managing impacts of the fishery upon them.</p>

PI 2.2.2		There is a strategy in place for managing bycatch that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to bycatch populations	
SG	Issue	Met? (Y/N)	Justification/Rationale
		Y	<b>Scalloped hammerhead</b> We consider that the recent development of Amendment 5 to the 2006 HMS FMP which proposes specific management measures in PLL to manage bycatch of this species and quotas to limit catches of them in other (e.g. shark) fisheries in the U.S. represents a shift from a partial strategy to manage this species (previously as part of the LCS complex) to a strategy based on a species specific assessment.
		Y	<b>Pelagic stingray</b> Measures brought in to minimise bycatch under the HMS FMP represent a partial strategy to manage pelagic stingrays. The stock is not considered to be overfished or suffering from overfishing, therefore no species-specific measures have been implemented.
	b		There is <b>some objective basis for confidence</b> that the partial strategy will work, based on some information directly about the fishery and/or the species involved.
		Y	<b>Blue marlin, white marlin/roundscale spearfish, west Atlantic sailfish, blue shark, pelagic stingray</b> As with other HMS species covered by the HMS FMP, stock status for species or species groups are monitored. If changes to status trigger a management action, a number of alternative measures are considered through respective impact analyses using data from the fishery and/or species in question in order to evaluate the likely success of management measures being considered.
		Y	<b>Night shark, longfin mako, bigeye thresher, scalloped hammerhead sharks</b> As with other HMS species covered by the HMS FMP, stock status for species or species groups are monitored. If changes to status trigger a management action, a number of alternative measures are considered through respective impact analyses using data from the fishery and/or species in question in order to evaluate the likely success of management measures being considered. For example, landings data have provided corroborative evidence that the prohibited status of night sharks has reduced harvesting of the species since 2002. This provides objective basis for confidence that the measure will also work for scalloped hammerhead sharks.
	c		There is <b>some evidence</b> that the partial strategy is being implemented successfully.
		Y	<b>Blue marlin, white marlin/roundscale spearfish, west Atlantic sailfish, blue shark, night shark, longfin mako shark, bigeye thresher shark, scalloped hammerhead shark, pelagic stingray</b> Historical development of amendments drafted for the HMS FMP in response to changes in stock status of species covered by these plans, indicates that the management strategies are being implemented successfully. For example, various amendments implemented over the last 6 years have each addressed specific issues relating to stock status or management concerns for particular species of species complex of concern. A recent Amendment 5 (2012) addresses latest stock status determinations for Large Coastal Shark complex as a result of stock assessment updates; and proposes a rebuilding plan for scalloped hammerhead sharks. This demonstrates that the management system monitors the impact of the fisheries, determine when further action is necessary, evaluates alternative actions, and implements measures as necessary.
100	a		There is a <b>strategy</b> in place for managing and minimising bycatch.

PI 2.2.2		There is a strategy in place for managing bycatch that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to bycatch populations	
SG	Issue	Met? (Y/N)	Justification/Rationale
		Y	<p><b>Blue marlin, white marlin/roundscale spearfish, west Atlantic sailfish, blue shark, night shark, longfin mako shark, bigeye thresher shark, scalloped hammerhead sharks, pelagic stingray</b></p> <p>Management measures implemented under HMS FMP and associated amendments represent a strategy for minimising bycatch of all species and include measures directed specifically at reducing bycatch of billfish and sharks to ensure that the fishery does not hinder recovery.</p> <p>The bycatch reduction plan incorporated within the U.S. HMS FMP represents a cohesive and strategic arrangement, comprising a number of measures aimed specifically at managing impacts of the fishery on all bycatch species.</p> <p>Measures include those expected to minimise bycatch (e.g. Florida East Coast closed area) and minimize the mortality of bycatch that cannot be avoided, e.g. prohibition of commercial retention and sale of <b>billfish</b> species and <b>night, longfin mako, bigeye thresher and scalloped hammerhead sharks</b>; use of circle hooks; requirement for de-hooking equipment on board; and implementation of outreach programmes encouraging safe release methods and gears.</p>
	b		<b>Testing</b> supports <b>high confidence</b> that the strategy will work, based on information directly about the fishery and/or species involved.
		Y	<p><b>Blue marlin, white marlin/roundscale spearfish, west Atlantic sailfish</b></p> <p>Reductions in bycatch of billfish bycatch species have exceeded estimates generated through analyses during development of the plan to determine which measures should be implemented as final rules. For example, discarded numbers of blue marlin, white marlin and sailfish decreased by 59%, 59% and 67% between the periods 1997-99 and 2005-10</p>
		Y	<p><b>Blue shark</b></p> <p>Stock assessments demonstrate that if management measures keep the catch of blue shark within quotas, that the population will be maintained at or above MSY levels. The US has kept blue shark harvest at levels that prevent overfishing or an overfished condition.</p>
		N	<p><b>Night shark, longfin mako shark, bigeye thresher shark, scalloped hammerhead shark</b></p> <p>There have been reductions in numbers of LCS and PS reported discarded in 2005-10 compared with 1997-1999, but across species complexes rather than on a species by species basis. Therefore we do not consider this issue to be met for the night shark, longfin mako shark, bigeye thresher shark, scalloped hammerhead shark.</p>
		N	<p><b>Pelagic stingray</b></p> <p>There has been no specific testing of management strategy/measures for pelagic stingrays.</p>
	c		There is <b>clear evidence</b> that the strategy is being implemented successfully.

PI 2.2.2		There is a strategy in place for managing bycatch that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to bycatch populations	
SG	Issue	Met? (Y/N)	Justification/Rationale
		Y	<b>Blue marlin, white marlin/roundscale spearfish, west Atlantic sailfish, blue shark, night shark, longfin mako shark, bigeye thresher shark, scalloped hammerhead shark, pelagic stingray</b> Historical development of amendments drafted for the HMS FMP in response to changes in stock status of species covered by these plans, indicates that the management strategies are being implemented successfully. Bycatch levels are monitored and the management strategy is responsive to increased risks imposed upon bycatch species by the fishery. For example, various amendments implemented over the last 6 years have each addressed specific issues relating to stock status or management concerns for particular species of species complex of concern. A recent Amendment 5 (2012) addresses latest stock status determinations for Large Coastal Shark complex as a result of stock assessment updates; and proposes a rebuilding plan for scalloped hammerhead sharks. Changes in gear use (i.e. from J-type to circle type hooks) and attendance of HMS permit holders at safe handling workshops is also clear evidence that the strategy is being implemented successfully.
	d		There is some <b>evidence</b> that the strategy is achieving its objective.
		Y	<b>Blue marlin, white marlin/roundscale spearfish, west Atlantic sailfish</b> Analyses on the effectiveness of bycatch reduction measures carried out by NMFS have shown reductions in the discarded numbers of blue marlin, white marlin and sailfish by 59%, 59% and 67% between the periods 1997-99 and 2005-09. Estimates of the billfish bycatch discarded dead in the U.S. commercial longline and other commercial fisheries in 2010 were 17.2 MT for blue marlin, 7.6 MT for white marlin, and 4.2 MT for sailfish, illustrating declines from 2009 dead discard estimates of 36.7 MT, 9.3 MT, and 9.2 MT respectively for the three species. Data from the fishery under assessment indicate that the greatest proportion of billfish discarded are released alive.
		Y	<b>Blue shark</b> Catches have remained at quota levels and the abundance has remained within biological limits.
		N	<b>Night shark, longfin mako shark, bigeye thresher shark, scalloped hammerhead shark</b> There have been reductions in numbers of LCS and PS reported discarded in 2005-10 compared with 1997-1999, but across species complexes rather than on a species by species basis. Therefore we do not consider this issue to be met for the night shark, longfin mako shark, bigeye thresher shark, scalloped hammerhead shark.
		N	<b>Pelagic stingray</b> There are no observed declines in catch rates for pelagic stingrays or indication that the population is suffering impacts from the fishery, but there has been no specific testing of management strategy/measures for pelagic stingrays.
References		NMFS, 2011 National Bycatch report. NMFS (2011a) Stock Assessment and Fishery Evaluation Report for Atlantic Highly Migratory Species. NMFS (2012) pre-draft Amendment 5 to the HMS FMP NOAA, 2011 Serafy et al. 2012 bull mar science Pacheco et al., 2011	
			<b>Blue marlin</b> 100
			<b>white marlin/roundscale spearfish</b> 100
			<b>West Atlantic sailfish</b> 100
			<b>Blue shark</b> 100
			<b>Pelagic stingrays</b> 90
			<b>Longfin mako</b> 90



<b>PI 2.2.2</b>		<b>There is a strategy in place for managing bycatch that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to bycatch populations</b>	
<b>SG</b>	<b>Issue</b>	<b>Met? (Y/N)</b>	<b>Justification/Rationale</b>
			<b>Scalloped hammerhead</b> <b>90</b>
			<b>Bigeye thresher</b> <b>90</b>
			<b>Night shark</b> <b>90</b>
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>			<b>90</b>
<b>CONDITION NUMBER (if relevant):</b>			<b>NA</b>

Evaluation Table: PI 2.2.3

PI 2.2.3		Information on the nature and the amount of bycatch is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage bycatch	
SG	Issue	Met? (Y/N)	Justification/Rationale
60	a		<b>Qualitative information</b> is available on the main bycatch species affected by the fishery.
		Y	Qualitative and some quantitative information is available on the amount of all of the main bycatch species taken by the fishery. Data are available from vessel logbooks of catch and release fate by numbers from both vessel logbooks (FLS) and the pelagic observer programme (POP).
	b		Information is <b>adequate to broadly understand</b> outcome status with respect to biologically based limits
		Y	<b>Blue marlin, white marlin/roundscale spearfish, west Atlantic sailfish,</b> Information is adequate to broadly understand outcome status with respect to biologically based limits for all billfish species. Assessments are carried out by ICCAT for these species, and although there are uncertainties associated with generic billfish catch reporting for some fleets, impacting the stocks elsewhere in the Atlantic, information is adequate to broadly understand outcome status with respect to biologically based limits.
		Y	<b>Blue shark, scalloped hammerhead shark</b> Life history information and catch data available for blue sharks has enable ecological risk assessment to be carried out which indicate that blue sharks have relatively high productivity and intermediate susceptibility to over-exploitation. Information available has also enabled ICCAT to complete assessments for blue sharks in 2008 using a variety of different models each with varying degrees of uncertainty in their results. Although model results were uncertain, most consistently predicted that blue shark stocks in the Atlantic are not over-fished and that over-fishing is not occurring. The Atlantic population of scalloped hammerhead sharks in U.S. waters was assessed in October 2009. The assessment utilized a surplus production model, an approach commonly used in data poor scenarios, and incorporated commercial and recreational landings, fisheries dependent data, fisheries independent data from NMFS observer programs, and scientific surveys.
		Y	<b>Longfin mako shark, bigeye thresher shark, night shark</b> Although life history parameters are not available for <b>longfin mako</b> sharks, an Ecological Risk Assessment (ERA) utilising Productivity Susceptibility Analysis (PSA) used parameters available for shortfin mako sharks as proxies. Inclusion of assessed species (such as shortfin mako and blue shark) within the PSA enables the level of risk of over-exploitation for other species by comparing their relative positions on the risk plots. Results of the ERA indicated that <b>bigeye thresher</b> sharks are near the high-risk area of the productivity-susceptibility plot sharks, and <b>longfin mako</b> sharks are also highly vulnerable. Quantitative biological information (e.g., age, growth, longevity, age-at-maturity) for <b>night shark</b> stocks off the US east coast and Gulf of Mexico are lacking, and this has prevented the development of any type of demographic models to predict the productivity of the stock. However, a status review in 2008 reviewed all available information for the United States population of night shark. Analysis indicated that the species have intrinsic rates of about 10% per year and have moderate rebound potential and an intermediate generation time compared to other sharks placing them in the upper-half along the 'fast-slow' continuum of life history traits and population parameters as described by Cortes (2002). It is likely that the population of night sharks has declined relative to virgin biomass, but abundance data do not indicate that this species have suffered large magnitudes in decline.
		Y	<b>Pelagic stingray</b> An ecological risk assessment (PSA) demonstrates that the pelagic stingray is at low

PI 2.2.3		Information on the nature and the amount of bycatch is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage bycatch	
SG	Issue	Met? (Y/N)	Justification/Rationale
	c		risk from Atlantic longline fisheries in general and the least vulnerable of several elasmobranch analysed by SCRS; the risk assessment provides information to broadly understand the stock status with regard to biologically based limits. This species is one of the most productive of the live-bearing elasmobranchs; its annual rate of increase of 31% is more than triple that of some of the Threatened oceanic sharks and rays.
			Information is adequate to support <b>measures</b> to manage bycatch.
		Y	<b>Blue marlin, white marlin/roundscale spearfish, west Atlantic sailfish, blue shark, night shark, longfin mako shark, bigeye thresher shark, scalloped hammerhead sharks, pelagic stingray</b> Information from the fishery is adequate to support measures implemented under the HMS FMP; POP and Vessel logbook data are routinely used by NMFS in analyses and simulations carried out to determine potential impacts of future actions during the consultation process of any amendment to an FMP.
80	a		<b>Qualitative information and some quantitative information</b> are available on the amount of main bycatch species affected by the fishery.
		Y	<b>Blue marlin, white marlin/roundscale spearfish, west Atlantic sailfish, blue shark, night shark, longfin mako shark, bigeye thresher shark, scalloped hammerhead sharks, pelagic stingray</b> Quantitative information on numbers of fish caught and their fate (e.g. kept, discarded dead or discarded alive) is reported in vessel log books (FLS data). Additional quantitative and qualitative information is available from the POP. The POP data are the only source of quantitative information currently available for <b>pelagic stingrays</b> .
	b		Information is <b>sufficient to estimate</b> outcome status with respect to biologically based limits.
		Y	<b>Blue marlin</b> Information is sufficient to estimate outcome status of blue marlin with respect to biologically based limits. Through an additional data preparatory meeting held in 2010 for blue marlin, generic billfish catches for some fleets were assigned to blue marlin and a full assessment was completed for blue marlin in 2011. Two different models were run, a non-equilibrium production model (ASPIC) for continuity from the 2000 assessment (the last assessment during which stock status benchmarks were developed), and a fully integrated stock synthesis model. The latter was selected to provide estimates of current stock status and subsequent projections based on the fact that the production model was unable to arrive at a satisfactory fit to the data. The fully integrated model is also able to incorporate more of the available data and able to successfully arrive at convergence.
		N	<b>White marlin/roundscale spearfish, west Atlantic sailfish</b> Information is not sufficient to estimate outcome status with respect to biologically based limits for these species. Stock assessments for white marlin are uncertain due to issues associated with generic billfish catch reporting, and also confounded by recent determination of a new species, the roundscale spearfish, which was previously considered to be white marlin. As a result, the biological parameters used in the assessment for white marlin are not necessarily specific to this species.  <b>Because this scoring issue at the SG80 level is not met a condition is raised for white marlin and Atlantic sailfish.</b>
		Y	<b>Blue shark</b> There is sufficient information (including data and life history parameters) to estimate outcome status for the north Atlantic stock of blue shark. The 2008 ICCAT assessment estimated in many model runs (using surplus production models, age-structured models and catch-free models), stock status appeared to be close to unfished biomass levels and fishing mortality rates well below those corresponding

PI 2.2.3		Information on the nature and the amount of bycatch is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage bycatch	
SG	Issue	Met? (Y/N)	Justification/Rationale
			to the level at which MSY is reached.
		Y	<b>Night shark, Longfin mako, bigeye thresher sharks</b> Quantitative biological information (e.g., age, growth, longevity, age-at-maturity) for stocks off the US east coast and Gulf of Mexico are lacking, which prevents development of demographic models that could be used to predict the productivity of the stock. However, in the absence of a quantitative assessment, NMFS has determined qualitatively (through PSA etc.) that, from the perspective of the US, the stock is overfished and undergoing overfishing.
		Y	<b>Pelagic stingray</b> The ecological risk assessment shows low risk from Atlantic longline fisheries in general and the least vulnerable of several elasmobranch analysed by SCRS; we conclude that it is sufficient to estimate the outcome status, given the low risk. This species is one of the most productive of the live-bearing elasmobranchs; its annual rate of increase of 31% is more than triple that of some of the Threatened oceanic sharks and rays.
		Y	<b>Scalloped hammerhead shark</b> The Atlantic population of scalloped hammerhead sharks in U.S. waters was assessed in October 2009. The assessment utilized a surplus production model, an approach commonly used in data poor scenarios, and incorporated commercial and recreational landings, fisheries dependent data, fisheries independent data from NMFS observer programs, and scientific surveys.
	c	Y	Information is adequate to support a <b>partial strategy</b> to manage main bycatch species.
			<b>White marlin/roundscale spearfish, west Atlantic sailfish, blue shark, night shark, longfin mako shark, bigeye thresher shark, scalloped hammerhead shark</b> Information from the fishery is adequate to support measures implemented under the HMS FMP; POP and Vessel logbook data are routinely used by NMFS in analyses and simulations carried out to determine potential impacts of future actions during the consultation process of any amendment to an FMP. The objectives of the POP are to: <ul style="list-style-type: none"> <li>- Obtain target and bycatch numbers on pelagic species caught on longline gear.</li> <li>- Record length measurements and sex on all pelagic species brought on board.(swordfish, tunas, billfish, sharks, other finfish and protected species)</li> <li>- Record detailed gear characteristics of commercial longline vessels.</li> </ul> The information collected is used by NMFS to evaluate harvest levels and the status of pelagic fish stocks as well as the effectiveness of management measures to control harvest levels.
	d	N	Sufficient data continue to be collected to detect any increase in risk to main bycatch species (e.g., due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the strategy).
			Data collected by the POP allow estimates of total mortality of bycatch species to be generated; these data have been used to provide mortality estimates from the US Atlantic longline fishery to be incorporated into ICCAT assessments for billfish and some shark species.  However, a discrepancy between logbook and observer data for many bycatch (non-retained) species suggests incomplete reporting of these species by fishermen. For example, pelagic stingrays, which occur frequently in the observer data, do not appear in the logbook data. This increases the level of uncertainty with respect to the unobserved portion of the fleet. Improved reporting by the commercial fleet would enhance the ability to detect any increase in risk to main bycatch species.  <b>Because this scoring issue at the SG80 level is not met a condition is raised for</b>

PI 2.2.3		Information on the nature and the amount of bycatch is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage bycatch	
SG	Issue	Met? (Y/N)	Justification/Rationale
			bycatch species.
100	a	N	Accurate and verifiable information is available on the amount of all bycatch and the consequences for the status of affected populations.
	b		Information is <b>sufficient</b> to quantitatively estimate outcome status with respect to biologically based limits with a <b>high degree of certainty</b> .
	c		Information is adequate to support a <b>comprehensive strategy</b> to manage bycatch and evaluate with a <b>high degree of certainty</b> whether a strategy is <b>achieving its objective</b> .
	d		Monitoring of bycatch data are conducted in sufficient detail to assess ongoing mortalities to all bycatch species.
	References		Cortes et al 2008 Cortés, E. 2002. Incorporating uncertainty into demographic modeling: application to shark populations and their conservation. Conserv. Biol. 16:1–15.
Blue marlin			75
white marlin/roundscale spearfish			70
West Atlantic sailfish			70
Blue shark			75
Pelagic rays			75
Longfin mako			75
Scalloped hammerhead			75
Bigeye thresher			75
Night shark			75
OVERALL PERFORMANCE INDICATOR SCORE:			75
CONDITION NUMBER (if relevant):			2.1

Evaluation Table: PI 2.3.1

PI 2.3.1		<p>The fishery meets national and international requirements for the protection of ETP species</p> <p>The fishery does not pose a risk of serious or irreversible harm to ETP species and does not hinder recovery of ETP species</p>	
SG	Issue	Met? (Y/N)	Justification/Rationale
60	a		Known effects of the fishery are <b>likely</b> to be within limits of national and international requirements for protection of ETP species.
		Y	<p><b>Sea Turtles</b></p> <p>The US Endangered Species Act, ICCAT resolutions and recommendations, and CITES are key national and international instruments that deal with sea turtles. Having previously met the requirements of ICCAT resolution 03-11, the fishery meets the requirements of the recently adopted ICCAT Recommendation 10-09 on sea turtles. There is no trade in loggerheads or leatherbacks to/from the U.S., due to CITES listing; we therefore consider international requirements to be met for both turtle species.</p> <p>The US ESA requires consultations on ETP species to determine requirements for protection; these include production of Biological Opinions on whether activities are likely to jeopardise ETP populations and with respect to turtles, these include Incidental Take Statements (ITS) which limit the number of incidental takes the activity may result in.</p> <p>Information on interactions with sea turtles is available from the fishery primarily through the Pelagic Observer Program (NMFS POP data). These observed interactions combined across all management areas and multiplied by all associated effort (NMFS FLS data) amount to total estimated interactions for the whole US Atlantic pelagic longline fleet which are below the annual and 3 year IT limits set out by the 2004 BiOp (i.e. National limits) for both loggerheads and leatherbacks. Interactions observed across the US Atlantic pelagic longline fleet in 2011 (Fig 14) amount to total estimated interactions which are below the annual IT limits of 635 for loggerheads and 588 for leatherbacks as set out in 2004 BiOp, though for loggerhead sea turtles the total 95% confidence interval estimates the higher range of possible takes to be just below the IT limit. Therefore this scoring guidepost is met for both turtle species considered here.</p>
		Y	<p><b>Marine Mammals</b></p> <p>CITES list long-finned pilot whales and Risso's dolphins as Appendix II. ICCAT has no specific requirements other than the ICCAT observer requirements, which the US meets.</p> <p>Under MMPA, PBR for long-finned pilot whales is 93 whales and 172 for short-finned pilot. In all gear types from 2005-2009, total annual estimated average fishery-related mortality or serious injury for the two species combined was estimated to be 162 whales; 114 of these were attributed to longline gear (NMFS 2011a). If all pilot whale mortality or serious injury were attributed to long-finned, the fishery would exceed the PRB. However, by allocation of mortality and injury in the MAG to short-finned pilot whales, it is likely that takes of long-finned pilot whales will decrease to levels below PBR. For short-finned pilot whales, the total fishery mortality currently does not exceed PBR.</p> <p>PBR of Risso's dolphin is 121. Estimated total average annual fishery-related mortality or serious injury to this stock was estimated to be 17 animals for all gear types between 2006 and 2010; 7.4 of these are attributed to pelagic longline gear; therefore, the fishery remains substantially below the PBR for this species.</p>
		NA	<p><b>Seabirds (not scored)</b></p> <p>The US has complied with the United Nations International Plan of Action for Seabirds through a National Plan of Actions for Seabirds. The NPOA-S acknowledges the Atlantic pelagic longline fishery, but determined that the quantitatively estimated low seabird catch does not need specific requirements. Because of the minimal interactions,</p>

PI 2.3.1	<p>The fishery meets national and international requirements for the protection of ETP species</p> <p>The fishery does not pose a risk of serious or irreversible harm to ETP species and does not hinder recovery of ETP species</p>	
		seabirds are not scored.
	<b>b</b>	Known direct effects are <b>unlikely</b> to create <b>unacceptable impacts</b> to ETP species
	<b>Y</b>	<p><b>Sea Turtles</b></p> <p>All but four of the turtles (301 loggerheads caught, 1 mortality and 141 leatherbacks caught a 3 mortalities) observed within the Unit of Certification between 2005 and 20011 were released alive or were lost at the surface. All leatherbacks observed caught were entangled or externally hooked; three loggerheads caught had swallowed the hooks and these were not removed before being released and therefore their post hooking survival is likely to have been reduced.</p> <p>Impacts on leatherback turtles are generally on adults and therefore have more potential to have immediate impact on population status; however, as evidenced by interactions with this species observed in the fishery under assessment, this species is more commonly caught via external hooking which is less likely to lead to serious internal injuries which increase post-hooking mortality.</p> <p>Interactions with loggerhead turtles more frequently involve juveniles than adults. Juveniles are subject to higher natural mortality from more sources than adults, hence the incremental impact of the fishery is less than if the interactions were more frequently with adults. Additionally, very small percentages of interactions observed in this fishery cause injuries which have a higher likelihood of post-hooking mortality. The entire US Atlantic pelagic longline loggerhead bycatch accounts for 0.6% of takes and 0.1% of mortality from all pelagic longline fisheries in the Atlantic.</p> <p>These factors, combined with the low levels of interactions observed in the fishery suggest that known direct effects are unlikely to have unacceptable impacts on loggerhead populations.</p> <p>Comparison with the ITS limits and associated mortality estimates which are currently in place as a result of the most recent 2004 BiOp, supports these conclusions.</p> <p>Estimates of loggerhead and leatherback interaction levels in 2002 are considered to be the status quo prior to the implementation of bycatch reduction management measures which were brought in as a result of the 2001 BiOp which determined that the US Atlantic longline fishery was likely to jeopardise both loggerhead and leatherback populations. In order to calculate ITS limits, these status quo estimates have been adjusted by results from research carried out testing different hook and bait types to account for the expected reductions in loggerhead and leatherback interactions from measures introduced in 2001 and 2004 to address impacts of the longline fishery jeopardising loggerheads (in 2001) and leatherbacks (in 2001 and in 2004) such as the introduction of circle hooks and baits for the different management areas.</p> <p>Expected mortality resulting from these estimated takes is estimated by NMFS using information from the observer program and research experiments carried out by NMFS on expected mortality on capture and expected post-release mortality for different levels and types of interactions and gear removal. In order to generate the most conservative mortality estimates (i.e. the worst case mortality expected), estimates from the least effective combination of hook and bait available by area are used.</p> <p>Mortality for the entire US Atlantic pelagic longline fleet is expected to be 198 leatherback turtles and 143 loggerhead turtles annually.</p> <p>Take estimates for the US North Atlantic in 2011 were 437.6 (of which 43.8 were outside of the Unit of Certification) for loggerheads and 238.5 (of which 33.7 occurred</p>

PI 2.3.1		<p>The fishery meets national and international requirements for the protection of ETP species</p> <p>The fishery does not pose a risk of serious or irreversible harm to ETP species and does not hinder recovery of ETP species</p>	
			outside of the Unit of Certification) for leatherbacks; application of the NMFS mortality rate estimates equates to 143 and 198 annual estimated mortalities for loggerheads and leatherbacks respectively. This low level of mortality is considered unlikely to create unacceptable impacts on the status of loggerhead and leatherback populations.
		Y	<p><b>Marine Mammals</b></p> <p>By definition, maintaining fishery removals below PBR would allow the population to remain at or recover to optimal population size. Therefore, the fishery is unlikely to create unacceptable impacts on marine mammals.</p>
		NA	<p><b>Sea Birds (Not Scored)</b></p> <p>NMFS has determined that the low seabird catch by the fishery has no unacceptable impacts, and there are no national requirements.</p>
80	a		The effects of the fishery are known and are <b>highly likely</b> to be within limits of national and international requirements for protection of ETP species.
		Y	<p><b>Sea Turtles</b></p> <p>Mean interactions estimated across the US Atlantic pelagic longline fleet in 2011 amounted to total estimated interactions which are below the annual IT limits of 635 for loggerheads and 588 for leatherbacks as set out in 2004 BiOp; the upper 95% confidence limit was below the IT in both cases. The coefficients of variation (CVs) on which these estimates are based are also below the precision target of 30% required for monitoring ETP species by NOAA. Therefore interactions are <u>highly likely</u> to be within national requirements.</p>
		N	<p><b>Marine Mammals</b></p> <p>Estimates of long-finned pilot whales are not available separately from short-finned pilot whales until 2012. It is therefore difficult to confirm that the effects on long-finned pilot whales are highly likely to meet the PBR. Now that identification of pilot whales by species occurs, monitoring against the PBR will be possible. Because the first scoring issue at the SG80 level is not met for marine mammals, <b>a condition is raised for long-finned pilot whale. The Condition is provided in Section 6.3 and Appendix 1.2.</b></p>
		NA	<p><b>Sea Birds (Not Scored)</b></p> <p>The US has determined that the fishery does not need requirements for mitigation of seabird bycatch because of low impacts, hence the Assessment Team concluded that the fishery is highly unlikely to have adverse impacts.</p>
	b		Direct effects are <b>highly unlikely</b> to create <b>unacceptable impacts</b> to ETP species.
		Y	<p><b>Sea Turtles</b></p> <p>The 2004 BiOp considered that leatherbacks remained in jeopardy from the US Atlantic pelagic longline fishery and as a result introduced additional measures to further minimise post-release mortality for this species. Bycatch rates across the entire US Atlantic pelagic longline decreased by 59% for leatherbacks between the periods 2005-2007 and 2002-2004 (when measures were implemented). The most recent estimates of interactions (i.e. from 2007-2011) continue this downward trend across the US Atlantic fleet. Due to this low level of interaction, combined with the most recent status estimate for this species being relatively stable in the Atlantic, we consider this scoring guidepost to be met for leatherbacks.</p> <p>Assessments for the 2001 BiOp of the Atlantic loggerhead populations considered</p>



PI 2.3.1		<p>The fishery meets national and international requirements for the protection of ETP species</p> <p>The fishery does not pose a risk of serious or irreversible harm to ETP species and does not hinder recovery of ETP species</p>	
			<p>relevant to the US Atlantic pelagic longline fishery were thought to be either stable (northern subpopulation) or increasing (south Florida subpopulation); but the longline fishery was considered to impact the potential for these populations to recover fully (from historical population declines) and as a result a number of measures were introduced and ITS were issued. The ITS currently in place through the 2004 BiOp was based on the most recent assessment information (i.e. from 2001) combined with the expected reductions in bycatch achieved through measures introduced in 2001/2002. A recent review of population status of Atlantic and Mediterranean loggerhead populations, has determined nine distinct and significant global population segments (DPS) for this species. A proposal to uplist loggerheads from threatened to endangered was considered by NMFS and USFWS in 2011 and 2012; at the time of the SE US Swordfish assessment, uncertainty in the results of the determination for the request to upload led to the fishery not meeting this scoring guidepost with a resultant condition. The determination subsequently resulted in maintaining the loggerhead as endangered, thereby rejecting the proposed uplisting.</p> <p>Due to this low level of interaction, combined with the most recent status estimate for this species being relatively stable in the Atlantic, we consider this scoring guidepost to be met for loggerheads.</p>
		N	<p><b>Marine Mammals</b></p> <p>The determination of direct effects comes from maintaining the mortality and serious injury below the PBR. As the estimate for long-finned pilot whales is uncertain, a determination that the mortality and serious injury is below the PBR cannot be made with high likelihood. Because the second scoring issue at the SG80 level is not met for marine mammals, <b>a condition is raised for long-finned pilot whale. The Condition is provided in Section 6.3 and Appendix 1.2</b></p>
		NA	<p><b>Sea Birds (Not Scored)</b></p> <p>NMFS has determined that the low seabird catch by the fishery has no unacceptable impacts, and there are no national requirements.</p>
	c		Indirect effects have been considered and are thought to be <b>unlikely</b> to create unacceptable impacts.
		Y	<p><b>Sea Turtles</b></p> <p>The fishery does not impact the nesting habitat on beaches and is unlikely to have unacceptable impacts on the ecosystem (such as trophic interactions) on which loggerhead and leatherback turtles depend. This scoring guidepost is therefore met for both species. As direct effects of the fishery are highly unlikely to create unacceptable impacts to sea turtles, the condition for the SE US Swordfish is considered closed.</p>
		Y	<p><b>Marine Mammals</b></p> <p>The fishery is unlikely to have unacceptable impacts on the ecosystem (such as trophic interactions) on which pilot whales and Risso's dolphins depend. This scoring guidepost is therefore met for these species.</p>
		NA	<p><b>Sea Birds (not scored)</b></p> <p>The fishery is unlikely to have unacceptable impacts on nesting of seabirds or on the ecosystem (such as trophic interactions) on seabirds depend. This scoring guidepost is therefore met for these species.</p>
	100	a	There is a <b>high degree of certainty</b> that the effects of the fishery are within limits of national and international requirements for protection of ETP species.

<b>PI 2.3.1</b>		<b>The fishery meets national and international requirements for the protection of ETP species</b> <b>The fishery does not pose a risk of serious or irreversible harm to ETP species and does not hinder recovery of ETP species</b>	
	<b>b</b>		There is a <b>high degree of confidence</b> that there are no significant <b>detrimental direct effects</b> of the fishery on ETP species.
	<b>c</b>		There is a <b>high degree of confidence</b> that there are no significant <b>detrimental indirect effects</b> of the fishery on ETP species.
<b>References</b>		NMFS 2004a. Biological opinion on the re-initiation of consultation on the Atlantic pelagic longline fishery for highly migratory species. National Marine Fisheries Service, St. Petersburg, Florida, June 1, 2004.	
<b>Sea Turtles</b>			<b>80</b>
<b>Marine Mammals</b>			<b>70</b>
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>			<b>75</b>
<b>CONDITION NUMBER (if relevant):</b>			<b>2.2</b>

Evaluation Table: PI 2.3.2

PI 2.3.2		The fishery has in place precautionary management strategies designed to:	
		<ul style="list-style-type: none"> <li>• Meet national and international requirements;</li> <li>• Ensure the fishery does not pose a risk of serious harm to ETP species;</li> <li>• Ensure the fishery does not hinder recovery of ETP species; and</li> <li>• Minimise mortality of ETP species.</li> </ul>	
SG	Issue	Met? (Y/N)	Justification/Rationale
60	a		There are <b>measures</b> in place that minimise mortality, and are expected to be <b>highly likely to achieve</b> national and international requirements for the protection of ETP species.
		Y	<p><b>Sea Turtles</b></p> <p>The measures in place which minimise mortality of sea turtles in the fishery under assessment include mandatory use of circle hooks, increased gangion lengths, possession of de-hooking equipment onboard all vessels and attendance at “Protected Species Safe Handling, Release and Identification Workshops” by captains/vessel owners every three years (see Section 3.4.2.4).</p> <p>The circle hooks used by the fishery under assessment minimise mortality of leatherback turtles by reducing the interaction rate; and reduce mortality of loggerheads by reducing post-hooking mortality rates. Increased gangion lengths enable hooked turtles to reach the surface to breathe during soak time. Improved release technique and gear removal is expected to improve post-hooking and release survival.</p> <p>Implementation of these measures within the fishery is designed to achieve reductions in bycatch and associated mortality of these species as per national requirements.</p> <p>The recently adopted ICCAT Recommendation 10-09 requires pelagic longline vessels operating within ICCAT ‘to carry on board safe-handling, disentanglement and release equipment capable of releasing sea turtles in a manner that maximises the probability of their survival’; these correspond with some of the measures required and met by the fishery for national management.</p> <p>The Assessment Team concluded that this scoring issue at SG60 is met for both species of turtle.</p>
		Y	<p><b>Marine Mammals</b></p> <p>Due to incidental mortality and serious injury to marine mammals, the US Atlantic pelagic longline fishery is classified as a Category I fishery. NMFS convened a Pelagic Longline Take Reduction Team (PLTRT) in June 2005 for the fishery. The PLTRP is intended to meet the statutory mandates and requirements of the MMPA through both regulatory and nonregulatory measures, including a special research area, gear modifications, outreach material, observer coverage, and captains’ communications. Therefore, the fishery has measures that are highly likely to achieve requirements.</p>
		NA	<p><b>Sea Birds (not scored)</b></p> <p>The NPOA-S is designed to comply with the IPOA-S. The plan has measures that meet the requirements for seabirds generically. However, the low incidents of seabird interactions require no specific measures.</p>
	b		The measures are <b>considered likely</b> to work, based on <b>plausible argument</b> (e.g., general experience, theory or comparison with similar fisheries/species).
		Y	<p><b>Sea Turtles</b></p> <p>NMFS research shows that compared to J-hooks combined with squid bait, 16/0 non offset circle hooks with squid bait result in and estimated 64% reduction in the number of</p>

PI 2.3.2		<p>The fishery has in place precautionary management strategies designed to:</p> <ul style="list-style-type: none"> <li>• Meet national and international requirements;</li> <li>• Ensure the fishery does not pose a risk of serious harm to ETP species;</li> <li>• Ensure the fishery does not hinder recovery of ETP species; and</li> <li>• Minimise mortality of ETP species.</li> </ul>	
SG	Issue	Met? (Y/N)	Justification/Rationale
			<p>interactions with leatherback turtles. This is due to the lower external hooking rate with circle hooks. No reduction in loggerhead interaction rates was predicted by NMFS for this gear combination because small reductions in interaction rates observed in research sets for 16/0 circle hooks were not verified over a large enough sample size in the US Atlantic pelagic longline fishery at the time of the 2004 BiOp.</p> <p>Information from studies elsewhere in the Atlantic (Azores pelagic longline fishery) found significant differences in the hooking location of loggerhead turtles (of similar size to those caught in the US Atlantic fishery) on j-hooks and non-offset 16/0 circle hooks which have important implications for post interaction mortality rates. 53% of loggerheads caught on 9/0 J hooks were hooked in the throat compared to 8% when caught on 16/0 non-offset circle hooks. Studies in the Canadian Atlantic pelagic longline fishery have shown similar results with significantly higher percentages of hard-shelled turtles hooked in the mouth as opposed to the throat during the tuna-directed fishery when vessels use the 16/0 circle hooks.</p> <p>Post-hooking mortality for leatherbacks is not considered to be reduced greatly by hook type as most interactions involve external hooking and mortality resulting from interactions can be associated with other factors.</p> <p>The Assessment Team concluded that this scoring issue at SG60 is met for both species of turtle.</p>
		Y	<p><b>Marine Mammals</b></p> <p>The PLTRP is based on consensus recommendations submitted by the PLTRT to reduce serious injuries and mortalities of pilot whales and Risso's dolphins in the Atlantic pelagic longline fishery. Modeling of the 20 n mi maximum limit for pelagic longlines predicts substantial reductions in interactions of fishing gear with marine mammals. Targeted research in the region with most interactions (MAB) offers an opportunity to further improve mitigation measures. Placards on proper handling of marine mammals in the wheelhouse and on deck offers a continuous reminder of the importance of handling to maximize survival.</p>
		NA	<p><b>Sea Birds (Not Scored)</b></p> <p>The NPOA-S is designed to comply with the IPOA-S. The plan has measures that meet the requirements for seabirds generically. However, the low incidents of seabird interactions require no specific measures.</p>
80	a		<p>There is a <b>strategy</b> in place for <b>managing the fishery's impact</b> on ETP species, including measures to minimise mortality, which is designed to be <b>highly likely to achieve</b> national and international requirements for the protection of ETP species.</p>
		Y	<p><b>Sea Turtles</b></p> <p>A strategy for managing fishery impacts on ETP species exists under mechanisms promulgated through the MSFCMA and the Endangered Species Act (e.g. generation of BiOps, resulting RPAs and 3 yearly ITS). The rationale at SG60 explains how measures implemented within this strategy minimise mortality. Since measures brought in as a result of the last BiOP in 2004 have been implemented, there have been reductions in the number of estimated interactions between longline gear and both species of sea turtles across the entire US pelagic longline fishery (Fig. 14).</p> <p>The Assessment Team concluded that this scoring issue at SG80 is met for both species of turtle.</p>

PI 2.3.2		<b>The fishery has in place precautionary management strategies designed to:</b> <ul style="list-style-type: none"> <li>• <b>Meet national and international requirements;</b></li> <li>• <b>Ensure the fishery does not pose a risk of serious harm to ETP species;</b></li> <li>• <b>Ensure the fishery does not hinder recovery of ETP species; and</b></li> <li>• <b>Minimise mortality of ETP species.</b></li> </ul>	
SG	Issue	Met? (Y/N)	Justification/Rationale
		<b>Y</b>	<b>Marine Mammals</b>  NMFS has implemented a series of actions designed to protect marine mammals: <ul style="list-style-type: none"> <li>- Stock assessments of marine mammals;</li> <li>- Establishing Take Reduction Teams as necessary;</li> <li>- Marine Mammal Health and Stranding Response Program;</li> <li>- Conservation plans</li> <li>- Undertaking ecosystem science;</li> <li>- International Marine Mammal Action Plan.</li> </ul> The pelagic longline TRP implements a suite of management strategies to reduce mortality and serious injuries to pilot whales and also Risso's dolphins in the Atlantic pelagic longline fishery, including regulatory requirement and non-regulatory measures. Regulatory requirement include: <ul style="list-style-type: none"> <li>- A Cape Hatteras Special Research Area with specific observer and research participation requirements for fishing in the area</li> <li>- A 20 nm (37.02 km) upper limit on mainline length for all pelagic longline sets within the MAB</li> <li>- Requirement for an information placard on handling and release of marine mammals to be displayed in both the wheelhouse and on the working deck of all active pelagic longline vessels in the Atlantic fishery.</li> </ul> Non-regulatory measures include: <ul style="list-style-type: none"> <li>- Increased observer coverage in the MAB to 12-15 percent to ensure representative sampling of pilot whales and Risso's dolphins</li> <li>- Encouraging vessels to communicate daily with other vessels regarding protected species interactions</li> </ul>
		<b>NA</b>	<b>Sea Birds (Not Scored)</b>  The NPOA provides a precautionary strategy for seabirds. If protective or recovery measures were necessary for seabirds impacted by the pelagic longline fishery, the plan would form the basis for those actions. In the absence of impacts, as determined by NMFS, no measures are currently necessary.
	<b>b</b>		There is an <b>objective basis for confidence</b> that the strategy will work, based on <b>information</b> directly about the fishery and/or the species involved.
		<b>Y</b>	<b>Sea Turtles</b>  There is an <u>objective basis for confidence</u> that the strategy will work for both loggerheads and leatherbacks, based on trials testing measures enforced within the US Atlantic fishery and within similar fisheries in other parts of the Atlantic. Additionally decreased bycatch rates across the entire US Atlantic fishery since the measures were implemented suggest the strategy is working.
		<b>Y</b>	<b>Marine Mammals</b>  There is an objective basis that the strategic combination of overarching actions for protection of marine mammals combined with the specific regulations and measures for the pelagic longline fishery will work. The overarching actions implement the basic policy for protecting marine mammals. Specifically for the pelagic longline fishery: <ul style="list-style-type: none"> <li>- The decision to limit mainline length to 20 nm in the MAB only was based on the predictive model, which indicated measurable reductions in serious injuries and mortalities of pilot whales would be expected to occur without undue effects on target catch or bycatch of ESA-listed sea turtles.</li> <li>- The Cape Hatteras Special Research Area encompasses a 2,288 square mile (5927 sq km) region that over the past five years has exhibited high fishing effort and high</li> </ul>

PI 2.3.2		The fishery has in place precautionary management strategies designed to: <ul style="list-style-type: none"><li>• Meet national and international requirements;</li><li>• Ensure the fishery does not pose a risk of serious harm to ETP species;</li><li>• Ensure the fishery does not hinder recovery of ETP species; and</li><li>• Minimise mortality of ETP species.</li></ul>		
SG	Issue	Met? (Y/N)	Justification/Rationale	
			pilot whale bycatch rates. The CHSRA will enable focused research on pilot whale interactions with the pelagic longline fishery. <ul style="list-style-type: none"><li>- The placard is a laminated guide to careful handling and release of marine mammals and includes instructions for obtaining and completing the NMFS “Marine Mammal Injury/Mortality Reporting Form” in the event of an interaction with a marine mammal.</li></ul>	
		NA	<b>Sea Birds (Not Scored)</b>  The success of protecting seabirds in the US (e.g., from longline fisheries for groundfish and halibut in Alaska) demonstrates that effective measures are available and would be implemented if necessary.	
	c		There is <b>evidence</b> that the strategy is being implemented successfully.	
		Y	<b>Sea Turtles</b>  The historical bibliography of management documentations associated with the management procedures in place for minimising bycatch of sea turtles indicates that the management strategy is being implemented successfully. In addition, vessel captains and vessel owners and some crew have attended the Protected Species and Safe Handling workshops, and all vessels across the entire US Atlantic pelagic longline fishery now use circle hooks.	
		N	<b>Marine Mammals</b>  The specification of the pelagic longline take reduction plan that the fishery use mainlines of 20 n mi or less in the MAB has not been effectively implemented. NMFS has presented information that observer data show approximately 60% of the sets use mainlines longer than 20 n mi, and that logbook data show approximately 40% of the sets use mainlines longer than 20 miles. Because the third scoring issue at the SG80 level is not met for marine mammals, <b>a condition is raised. The Condition is provided in Section 6.3 and Appendix 1.2</b>	
		NA	<b>Sea Birds (Not Scored)</b>  Although no measures require implementing for seabirds, successful implementation has occurred in other areas.	
	100	a		There is a <b>comprehensive strategy</b> in place for managing the fishery’s impact on ETP species, including measures to minimise mortality that is designed to achieve <b>above</b> national and international requirements for the protection of ETP species.
b			The strategy is mainly based on information directly about the fishery and/or species involved, and a <b>quantitative analysis</b> supports <b>high confidence</b> that the strategy will work.	
c			There is <b>clear evidence</b> that the strategy is being implemented successfully.	
d			There is evidence that the strategy is achieving its objective.	
References		NMFS 2004a. Biological opinion on the re-initiation of consultation on the Atlantic		

PI 2.3.2		The fishery has in place precautionary management strategies designed to: <ul style="list-style-type: none"><li>• Meet national and international requirements;</li><li>• Ensure the fishery does not pose a risk of serious harm to ETP species;</li><li>• Ensure the fishery does not hinder recovery of ETP species; and</li><li>• Minimise mortality of ETP species.</li></ul>		
SG	Issue	Met? (Y/N)	Justification/Rationale	
			pelagic longline fishery for highly migratory species. National Marine Fisheries Service, St. Petersburg, Florida, June 1, 2004.	
			Sea Turtles	80
			Marine mammals	75
OVERALL PERFORMANCE INDICATOR SCORE:				75
CONDITION NUMBER (if relevant):				2.3

Evaluation Table: PI 2.3.3

PI 2.3.3		Relevant information is collected to support the management of fishery impacts on ETP species including:	
		<ul style="list-style-type: none"> <li>Information for the development of the management strategy;</li> <li>Information to assess the effectiveness of the management strategy; and</li> <li>Information to determine the outcome status of ETP species.</li> </ul>	
SG	Issue	Met? (Y/N)	Justification/Rationale
60	a		Information is sufficient to qualitatively estimate the fishery related mortality of ETP species.
		Y	<b>Sea Turtles</b>  Observer data allow quantitative estimates of sea turtle mortality, exceeding the requirement for qualitative estimates.
		Y	<b>Marine Mammals</b>  Observer data allow quantitative estimates of marine mammal mortality, exceeding the requirement for qualitative estimates.
		NA	<b>Seabirds (Not Scored)</b>  Observer data allow quantitative estimates of sea bird mortality, exceeding the requirement for qualitative estimates.
	b		Information is <b>adequate to broadly understand</b> the impact of the fishery on ETP species.
		Y	<b>Sea Turtles</b>  Research carried out in the NED and elsewhere in the Atlantic (e.g. off the Azores and Canada) has explored the effects of hook and bait types used in the fishery on interaction rates of longlines with turtles and associated mortality. This research has provided both qualitative and quantitative information (depending on species concerned) on post release survival probabilities for turtles hooked in different locations, enabling an understanding of what impacts the fishery may have on turtle populations.  The Assessment Team concluded that this scoring issue at SG60 is met for both species of turtle.
		Y	<b>Marine Mammals</b>  Information is broadly available to show that the fishery has potential impacts primarily in long-finned pilot whales, a strategic species. A PBR has been determined, estimates of interactions, including mortality and serious injury are available (starting in 2012 with the ability to identify short-finned from long-finned pilot whales), and modelling of the likely impacts of regulations to reduce impacts of the fishery. Risso's dolphin, also strategic, has low interactions from the fishery and is understood to have minimal impacts.
		NA	<b>Seabirds (Not Scored)</b>  Information is broadly available to demonstrate that the fishery poses no serious threat to the seabird populations, which therefore have no current need for measures.
	c		Information is adequate to support <b>measures</b> to manage the impacts on ETP species.
		Y	<b>Sea Turtles</b>  Bycatch estimates generated for whole Atlantic US pelagic longline fleet come from



PI 2.3.3		Relevant information is collected to support the management of fishery impacts on ETP species including: <ul style="list-style-type: none"> <li>Information for the development of the management strategy;</li> <li>Information to assess the effectiveness of the management strategy; and</li> <li>Information to determine the outcome status of ETP species.</li> </ul>	
SG	Issue	Met? (Y/N)	Justification/Rationale
			levels of observation deemed by NOAA to meet precision required for monitoring ETP species. This information is used to monitor incidental takes of turtles in the US Atlantic pelagic longline fishery against incidental take limits (ITS) which decrease over time to ensure loggerhead and leatherback turtle continued existence is not be jeopardised by the fishery. These ITS represent a key trigger mechanism by which action within the strategy can be applied to improve management of ETP species. 5 yearly status reviews provide additional information to support measures to manage loggerhead and leatherback turtles.
		Y	<b>Marine Mammals</b>  Bycatch estimates generated for whole Atlantic US pelagic longline fleet come from levels of observation deemed by NOAA to meet precision required for monitoring ETP species. This information is used to monitor incidental takes of marine mammals in the US Atlantic pelagic longline fishery against potential biological removals (PBR). These PBRs represent a key trigger mechanism by which action within the strategy can be applied to improve management of ETP species. Updates of stock assessments provide additional information to support measures to manage pilot whales and Risso's dolphins.
		Y	<b>Seabirds (Not Scored)</b>  Bycatch estimates generated for whole Atlantic US pelagic longline fleet come from levels of observation deemed by NOAA to meet precision required for monitoring ETP species. This information is used to monitor incidental takes of seabirds in the US Atlantic pelagic longline fishery. NMFS has determined that the low level of incidents of the fishery with seabirds does not require active management.
80	a		<b>Sufficient information</b> is available to allow fishery related mortality and the impact of fishing to be <b>quantitatively</b> estimated for ETP species.
		Y	<b>Sea Turtles</b>  Information collected through the Pelagic Observer Program (POP) has enabled quantitative estimates of turtle interactions of direct and indirect mortality to be made, which allows monitoring of trends by region and over time. Detailed data recorded by observers on the nature of interactions (e.g. hooking position and condition of turtle on release) allow the estimates of post-release mortality to be made. NMFS and USFWS have used best available information to determine incidental take limits (which count interactions, not just mortality) for each species.
		Y	<b>Marine Mammals</b>  Information collected through the Pelagic Observer Program (POP) is also used to monitor interactions with marine mammals and to make estimates of the take in relation to the Potential Biological Removal (PBR) level. Quantitative estimates are made for marine mammals for the entire US pelagic longline fishery relative to PBRs. An increase in observer coverage to 12% has been recommended to reduce uncertainty of estimates in management areas where interactions with marine mammals are a more significant problem, such as the MAB. NMFS and USFWS have used best available information to determine PBRs (which count interactions, not just mortality) for each species.
		NA	<b>Seabirds (Not Scored)</b>  Information collected through the Pelagic Observer Program (POP) has enabled

PI 2.3.3		Relevant information is collected to support the management of fishery impacts on ETP species including: <ul style="list-style-type: none"> <li>Information for the development of the management strategy;</li> <li>Information to assess the effectiveness of the management strategy; and</li> <li>Information to determine the outcome status of ETP species.</li> </ul>	
SG	Issue	Met? (Y/N)	Justification/Rationale
			quantitative estimates of seabird interactions of direct and indirect mortality to be made, which allows monitoring of trends by region and over time. Detailed data recorded by observers on the nature of interactions (e.g. hooking position and condition of seabirds on release) allow the estimates of post-release mortality to be made. NMFS used best available information to determine that incidental take limits for seabird species are not necessary.
	b		Information is <b>sufficient</b> to determine whether the fishery may be a threat to protection and recovery of the ETP species.
		N	<b>Sea Turtles</b>  The POP coverage is deemed by NMFS to be sufficient to meet precision requirements for monitoring of ETP species across the entire US Atlantic pelagic longline fleet. While the observer coverage may not be sufficient to make appropriate estimates of takes for specific management regions, the unit of certification encompasses numerous areas such that NMFS considers the area-wide estimates are sufficient.  However, a discrepancy between logbook and observer data for sea turtles suggests incomplete reporting of interactions with these species by fishermen. This increases the level of uncertainty with respect to the unobserved portion of the fleet. Improved reporting by the commercial fleet would enhance the ability to determine whether the fishery may be a threat to protection and recovery of loggerhead and leatherback populations.  <b>Because this scoring issue at the SG80 level is not met a condition is raised for ETP species. The Condition is provided in Section 6.3 and Appendix 1.2.</b>
		N	<b>Marine Mammals</b>  The POP coverage is deemed by NMFS to be sufficient to meet precision requirements for monitoring of ETP species across the entire US Atlantic pelagic longline fleet. While the observer coverage may not be sufficient to make appropriate estimates for specific management regions, the unit of certification encompasses numerous areas such that NMFS considers the area-wide estimates are sufficient.  However, a discrepancy between logbook and observer data for marine mammals suggests incomplete reporting of interactions with these species by fishermen. This increases the level of uncertainty with respect to the unobserved portion of the fleet. Improved reporting by the commercial fleet would enhance the ability to determine whether the fishery may be a threat to protection and recovery of marine mammal populations.  <b>Because this scoring issue at the SG80 level is not met a condition is raised for ETP species. The Condition is provided in Section 6.3 and Appendix 1.2.</b>
		NA	<b>Seabirds (Not Scored)</b>  The POP coverage is deemed by NMFS to be sufficient to meet precision requirements for monitoring of ETP species across the entire US Atlantic pelagic longline fleet. Several fisheries outside of the area in which the fishery under assessment operates are likely to impact seabird populations and information from these fisheries remains limited. This information shortfall requires additional attention through ICCAT.
	c		Information is sufficient to measure trends and support a full <b>strategy</b> to manage impacts on ETP species.
		Y	<b>Sea Turtles</b>

PI 2.3.3		Relevant information is collected to support the management of fishery impacts on ETP species including: <ul style="list-style-type: none"> <li>• Information for the development of the management strategy;</li> <li>• Information to assess the effectiveness of the management strategy; and</li> <li>• Information to determine the outcome status of ETP species.</li> </ul>	
SG	Issue	Met? (Y/N)	Justification/Rationale
			<p>The POP coverage is deemed by NMFS to be sufficient to meet precision requirements for monitoring of ETP species across the entire US Atlantic pelagic longline fleet. Observer coverage has been in place since 1992. This allows for tracking of trends and monitoring stock status against ITS. A combination of biological opinions that assemble biological and fishery information in the management context, legislation and regulations that specify requirements, and fishery specific logbook and observer data provide for the necessary information to develop a management strategy. Research on hook size and type and bait impacts provides confirmation that gear requirements work. VMS confirms compliance with closed areas. Observer data allows tracking of takes against ITS.</p>
		Y	<b>Marine Mammals</b> <p>The POP coverage is deemed by NMFS to be sufficient to meet precision requirements for monitoring of ETP species across the entire US Atlantic pelagic longline fleet. Observer coverage has been in place since 1992. This allows for tracking of trends and monitoring stock status against PBR. A combination of stock assessments that assemble biological and fishery information in the management context, legislation and regulations that specify requirements, and fishery specific logbook and observer data provide for the necessary information to develop a management strategy. Research on the interactions in the MAB area is intended to provide information to reduce interactions with pilot whales. VMS confirms compliance with closed areas. Observer data allows tracking of takes against PBR.</p>
		NA	<b>Seabirds (Not Scored)</b> <p>The POP coverage is deemed by NMFS to be sufficient to meet precision requirements for monitoring of ETP species across the entire US Atlantic pelagic longline fleet. Observer coverage has been in place since 1992. This allows for tracking of trends of interactions. A combination of stock assessments that assemble biological and fishery information in the management context, legislation and regulations that specify requirements, and fishery specific logbook and observer data provide for the necessary information to develop a management strategy. The low interactions of the fishery with seabirds do not require specific management, but the observer data allows monitoring of the conditions.</p>
100	a	N	Information is <b>sufficient to quantitatively</b> estimate outcome status of ETP species with a high degree of certainty.
	b	N	<b>Accurate and verifiable information</b> is available on the <b>magnitude of all impacts, mortalities and injuries</b> and the <b>consequences for the status</b> of ETP species.
	c	N	Information is adequate to support a <b>comprehensive strategy</b> to manage impacts, minimise mortality and injury of ETP species, and evaluate with a <b>high degree of certainty</b> whether a strategy is achieving its objectives.
References		[List any references here]	
			<div>Sea Turtles</div> <div>75</div>
			<div>Marine Mammals</div> <div>75</div>

PI 2.3.3		Relevant information is collected to support the management of fishery impacts on ETP species including: <ul style="list-style-type: none"> <li>• Information for the development of the management strategy;</li> <li>• Information to assess the effectiveness of the management strategy; and</li> <li>• Information to determine the outcome status of ETP species.</li> </ul>	
SG	Issue	Met? (Y/N)	Justification/Rationale
OVERALL PERFORMANCE INDICATOR SCORE:			75
CONDITION NUMBER (if relevant):			2.4

Evaluation Table: PI 2.4.1

PI 2.4.1		The fishery does not cause serious or irreversible harm to habitat structure, considered on a regional or bioregional basis and function	
SG	Issue	Met? (Y/P/N)	Justification/Rationale
60	a		The fishery is <b>unlikely</b> to reduce habitat structure and function to a point where there would be serious or irreversible harm.
			See SG 100.
80	a		The fishery is <b>highly unlikely</b> to reduce habitat structure and function to a point where there would be serious or irreversible harm.
			See SG 100.
100	a		There is <b>evidence</b> that the fishery is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm.
			<p>The pelagic longline fishery under certification takes place within surface oceanic waters; the gear does not make contact with the bottom and therefore does not pose a threat to benthic habitats. NMFS assess impacts of different gear types under relevant FMPs under MSFCMA requirements to designate and evaluate the status of essential fish habitat (EFH) for species covered by FMPs. The Consolidated HMS FMP (NMFS, 2006) considered impacts of pelagic gear to have no impact on the benthic environment and minimal to no impact to the pelagic environment.</p> <p>Handline buoy gear may have minimal contact if weights on the base of the vertical line touch the bottom during setting; based on information gained during the site visit with NMFS this is not considered to be an issue. Handline buoy gear effort is very low, any brief contact which arises during setting, would not cause serious or irreversible harm.</p> <p>But overall, there is a very low probability that the fishery would impact habitat structure and function to a point where there would be irreversible harm; according to the FAM v2.1 the 100 SG is almost met (only lacking quantitative evidence), therefore the Assessment Team allocated a score of 95 to reflect this.</p>
References		NMFS. 2006. Final Consolidated Atlantic Highly Migratory Species Fishery Management Plan. NOAA, NMFS, Office of Sustainable Fisheries, HMS Management Division, Silver Spring, MD. Public Document. pp. 1600.	
OVERALL PERFORMANCE INDICATOR SCORE:			95
CONDITION NUMBER (if relevant):			NA

Evaluation Table: PI 2.4.2

PI 2.4.2		There is a strategy in place that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to habitat types	
SG	Issue	Met? (Y/N)	Justification/Rationale
60	a	Y	There are <b>measures</b> in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of performance.
			See SG 80.
	b	Y	The measures are considered <b>likely</b> to work, based on plausible argument (e.g. general experience, theory or comparison with similar fisheries/habitats).
			See SG 80.
80	a	Y	There is a <b>partial strategy</b> in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above.
			See SG 100.
	b	Y	There is some <b>objective basis for confidence</b> that the partial strategy will work, based on <b>information directly about the fishery and/or habitats</b> involved.
			The fishery meets this second issue at SG80 and therefore also meets the first issue at SG60. In addition to EFDH for all species, Habitat Areas of Particular Concern have been designated to date for sandbar sharks and for bluefin tuna spawning grounds in the Gulf of Mexico due to vulnerability of these species and habitats.
	c	Y	There is <b>some evidence</b> that the partial strategy is being implemented successfully.
			Gear assessments completed by NMFS are summarised in FMPs and although there is no apparent impact of pelagic longlines or handline buoy gear on habitat, there is a framework under the FMP amendment process to enable associated rule-makings which are currently being used to assess and manage bottom longline impacts. Historical management documentation provides some evidence that the strategy is being implemented as directed.
100	a	Y	There is a <b>strategy</b> in place for managing the impact of the fishery on habitat types.
			The fishery meets this first issue at SG100 and therefore also meets the first issues at SG80 and SG60. Under the MSFCMA, Essential Fish Habitat (EFH) must be designated for all federally managed species and attempts made to minimize the extent of adverse effects on habitat caused by fishing and non-fishing activities, and actions identified to encourage conservation and enhancement of those habitats. FMPs and FEPs are therefore required to describe all EFH for all species (and all life stages of each species) covered by the plan and periodically review (once every five years) the status of these habitats, including evaluation of the non-fishery threats to them and evaluation of any impacts from fishing gear covered by the FMP.
	b	N	<b>Testing</b> supports <b>high confidence</b> that the strategy will work, based on <b>information directly about the fishery and/or habitats</b> involved.
			Testing has not occurred, because of the likely minimal impacts of the gear on habitats.
	c	Y	There is <b>clear evidence</b> that that strategy is being implemented successfully.
			The 5-year update of HMS EFH reviewed the impacts to habitat of the pelagic longline and handline buoy gear and determined that no measures are needed. The review and update provide clear evidence that the strategy of minimizing adverse impacts has been implemented successfully.
	d	Y	There is some evidence that the strategy is achieving its objective.
			The HMS EFH strategy has analysis and monitoring of the impacts of gear on habitats and confirmed the minimal impacts. NMFS has described and identified

<b>PI 2.4.2</b>		<b>There is a strategy in place that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to habitat types</b>	
<b>SG</b>	<b>Issue</b>	<b>Met? (Y/N)</b>	<b>Justification/Rationale</b>
			EFH for HMS species, attempted to minimize the extent of adverse effects on habitat caused by fishing and non-fishing activities, and identified actions to encourage conservation and enhancement of those habitats
<b>References</b>			<p>ASMFC. 2009. Habitat Program Five-Year Strategic and Management Plan 2009-2013. Atlantic States Marine Fisheries Commission, Washington, D.C. 7 pp.</p> <p>NMFS. 2006. Final Consolidated Atlantic Highly Migratory Species Fishery Management Plan. NOAA, NMFS, Office of Sustainable Fisheries, HMS Management Division, Silver Spring, MD. Public Document. pp. 1600.</p> <p>NMFS. 2009. HMS EFH 5-year update.  <a href="http://www.nmfs.noaa.gov/sfa/hms/Safe_Report/2010/HMS_SAFE_Report_2010_FINAL_3_EFH.pdf">http://www.nmfs.noaa.gov/sfa/hms/Safe_Report/2010/HMS_SAFE_Report_2010_FINAL_3_EFH.pdf</a></p> <p>SAFMC. 2009. Fishery Ecosystem Plan of the South Atlantic Region.</p>
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>			<b>95</b>
<b>CONDITION NUMBER (if relevant):</b>			<b>NA</b>

Evaluation Table: PI 2.4.3

PI 2.4.3		Information is adequate to determine the risk posed to habitat types by the fishery and the effectiveness of the strategy to manage impacts on habitat types	
SG	Issue	Met? (Y/N)	Justification/Rationale
60	a	Y	There is <b>basic understanding</b> of the types and distribution of main habitats in the area of the fishery.
			See SG 80.
	b	Y	Information is adequate to broadly understand the nature of the main impacts of gear use on the main habitats, including spatial overlap of habitat with fishing gear.
			See SG 80.
80	a	Y	The nature, distribution and <b>vulnerability</b> of all main habitat types in the fishery are known at a level of detail relevant to the scale and intensity of the fishery.
			FMPs have described EFH for species covered by these plans in extensive detail in some cases, covering the different habitats important to different life stages for each species. Evaluation of the EFH status is carried out at the scale of the fishery covered by the FMP.
	b	Y	Sufficient data are available to allow the nature of the impacts of the fishery on habitat types to be identified and there is reliable information on the spatial extent of interaction, and the timing and location of use of the fishing gear.
			Longline gear does not touch bottom, so has negligible impacts on benthic habitats. Hand gear may touch bottom on occasion. On-going monitoring of vessels, trips, and sets would determine if increases in handgear effort occurred such that a risk to habitat might occur.
	c	Y	Sufficient data continue to be collected to detect any increase in risk to habitat (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures).
			See SG 100.
100	a	Y	The distribution of habitat types is known over their range, with particular attention to the occurrence of vulnerable habitat types.
			FMPs have described EFH for species covered by these plans in extensive detail in some cases, covering the different habitats important to different life stages for each species. Evaluation of the EFH status is carried out at the scale of the fishery covered by the FMP.
			HAPC have also been designated under the HMS FMP to highlight habitats of particular importance to the species and/or life stages of fish which inhabit them. In addition, a FEP recently developed in 2009 has extensively detailed a variety of habitats within the SAFM area, and designated a number of MPAs to protect particularly vulnerable habitats (such as reefs).
	b	N	The physical impacts of the gear on the habitat types have been quantified fully.
			The impacts of pelagic longline gear on pelagic habitats is considered minimal, but has not been quantified.
	c	Y	Changes in habitat distributions over time are measured.
EFH status and the impacts of gear on its status is reviewed every 5 years and detailed extensively within HMS FMP and SAFMC FMP documentation.			
References			NMFS (2006) Final Consolidated Atlantic Highly Migratory Species Fishery Management Plan. NOAA, NMFS, Office of Sustainable Fisheries, HMS Management Division. Silver Spring, MD. Public Document. pp. 1600.



	SAFMC (2009) Fishery Ecosystem Plan of the South Atlantic Region. NMFS. 2009. HMS EFH 5-year update. <a href="http://www.nmfs.noaa.gov/sfa/hms/Safe_Report/2010/HMS_SAFE_Report_2010_FINAL_3_EFH.pdf">http://www.nmfs.noaa.gov/sfa/hms/Safe_Report/2010/HMS_SAFE_Report_2010_FINAL_3_EFH.pdf</a>
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>	<b>90</b>
<b>CONDITION NUMBER (if relevant):</b>	<b>NA</b>

Evaluation Table: PI 2.5.1

PI 2.5.1		The fishery does not cause serious or irreversible harm to the key elements of ecosystem structure and function	
SG	Issue	Met? (Y/P/ N)	Justification/Rationale
60	a	Y	The fishery is <b>unlikely</b> to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.
			See SG 80
80	a	Y	The fishery is <b>highly unlikely</b> to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.
			A number of key ecosystem elements might be disrupted by the fishery, including trophic relationships, size composition, biodiversity, and species distribution. The element considered of primary importance and to be most likely to be threatened by the fishery is that of trophic structure. However, we consider that the fishery is highly unlikely to disrupt trophic structure of the ecosystem to extreme irreversible levels, due to the scale at which the fishery operates relative the scale of species distributions impacted by the fishery. The fishery does not remove a substantial amount of high trophic level species (retained or bycatch) relative to the overall abundance of these species, and does not impact lower trophic levels.
100	a	N	There is <b>evidence</b> that the fishery is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.
			Additional trophic studies would provide evidence of underlying ecosystem structure and function beyond direct impacts on retained, bycatch, and ETP species.
References		UNEP (2006) The UNEP Large Marine Ecosystem Report. UNEP Regional Seas Report and Studies no. 182. Fishbase <a href="http://www.fishbase.org/search.php">http://www.fishbase.org/search.php</a>	
OVERALL PERFORMANCE INDICATOR SCORE:			80
CONDITION NUMBER (if relevant):			NA

Evaluation Table: PI 2.5.2

PI 2.5.2		There are measures in place to ensure the fishery does not pose a risk of serious or irreversible harm to ecosystem structure and function	
SG	Issue	Met? (Y/N)	Justification/Rationale
60	a	Y	There are <b>measures</b> in place, if necessary.
			See SG 80
	b	Y	The <b>measures</b> take into account potential impacts of the fishery on key elements of the ecosystem.
			See SG 80
	c	Y	The measures are considered likely to work, based on <b>plausible argument</b> (e.g., general experience, theory or comparison with similar fisheries/ecosystems).
			See SG 80
80	a	Y	There is a <b>partial strategy</b> in place, if necessary.
			A partial strategy is in place in the form of the bycatch reduction plan initiated under the HMS FMP. The measures currently in place under this plan are not specifically targeting management of trophic interactions within the ecosystem, however they are being implemented in order to minimise the removal of bycatch species comprised primarily of top level predators.  In addition, a recently adopted South Atlantic Fishery Ecosystem Plan (which covers dolphin fish and some other minor bycatch species in the fishery) details research and data needs in order to determine fishery impacts upon key ecosystem elements in the region and to develop a strategy to manage these impacts. It is also designed to incorporate ecosystem approach into adopted FMPs for single species or species complexes.
	b	Y	The partial strategy takes into account <b>available information and is expected to restrain impacts</b> of the fishery on the ecosystem so as to <b>achieve</b> the Ecosystem Outcome 80 level of performance.
			The partial strategy uses information on retained and species and on ETP species to minimize impacts to assure no serious or irreversible harm to the key elements of ecosystem structure and function.
	c	Y	The partial strategy is considered likely to work, based on <b>plausible argument</b> (e.g., general experience, theory or comparison with similar fisheries/ecosystems).
			These measures are considered likely to reduce impacts of the fishery on the trophic structure of the ecosystem indirectly, by minimising impacts on apex predators.
	d	Y	There is <b>some evidence</b> that the measures comprising the partial strategy are being <b>implemented successfully</b> .
			Historical development of amendments drafted for the HMS FMP and the SAFMC FMP in response to changes in stock status of species covered by these plans, indicates that the management strategies for these stocks are being implemented successfully.
100	a	N	There is a <b>strategy</b> that consists of a <b>plan</b> , in place.
			A specific strategy for managing fishery impacts on the ecosystem does not exist for the pelagic longline fishery.
	b	N	The <b>strategy</b> , which consists of a <b>plan</b> , contains measures to <b>address all main impacts of the fishery</b> on the ecosystem, and at least some of these measures are in place. The plan and measures are <b>based on well-understood</b> functional relationships between the fishery and the Components and elements of the ecosystem.

PI 2.5.2		There are measures in place to ensure the fishery does not pose a risk of serious or irreversible harm to ecosystem structure and function	
SG	Issue	Met? (Y/N)	Justification/Rationale
			This plan provides for <b>development of a full strategy that restrains impacts</b> on the ecosystem to ensure the fishery does not cause serious or irreversible harm.
			No specific strategy in the form of a plan.
	c	N	The measures are considered likely to work based on <b>prior experience</b> , plausible argument or <b>information</b> directly from the fishery/ecosystems involved.
			No specific strategy in the form of a plan.
	d	N	There is evidence that the measures are being <b>implemented successfully</b> .
			No specific strategy in the form of a plan.
References		NMFS. 2006. Final Consolidated Atlantic Highly Migratory Species Fishery Management Plan. NOAA, NMFS, Office of Sustainable Fisheries, HMS Management Division, Silver Spring, MD. Public Document. pp. 1600. SAFMC. 2009. Fishery Ecosystem Plan of the South Atlantic Region.	
OVERALL PERFORMANCE INDICATOR SCORE:			80
CONDITION NUMBER (if relevant):			NA

Evaluation Table: PI 2.5.3

PI 2.5.3		There is adequate knowledge of the impacts of the fishery on the ecosystem	
SG	Issue	Met? (Y/N)	Justification/Rationale
60	a	Y	Information is adequate to <b>identify</b> the key elements of the ecosystem (e.g., trophic structure and function, community composition, productivity pattern and biodiversity).
			See SG 80
	b	Y	Main impacts of the fishery on these key ecosystem elements can be inferred from existing information, and <b>have not been investigated in detail</b> .
			See SG 80
80	a	Y	Information is adequate to <b>broadly understand</b> the key elements of the ecosystem.
			Information for the region exists from fisheries and survey data which has enabled some interpretation of the key elements of the system. Preliminary ecosystem models of the food web (ECOPATH) have been developed for the region, utilising dietary information available on species and species groups.
	b	Y	Main impacts of the fishery on these key ecosystem elements can be inferred from existing information and <b>some have been investigated in detail</b> .
			Main impacts of the fishery on trophic structure are associated with species and functional group (e.g. high level predators) removal, for which data are available. Preliminary exploration of the trophic structure has been carried out with Ecopath, but detailed explorations of the fishery impact have not been investigated. Impacts of the fishery can be inferred from theory and research in other areas. Additional trophic studies would support development of main interactions beyond direct impacts on retained, bycatch, and ETP species.
	c	Y	The main functions of the Components (i.e., target, Bycatch, Retained and ETP species and Habitats) in the ecosystem are <b>known</b> .
			Trophic functional roles of ecosystem components are known, primarily through dietary studies and inference from similar systems. Extensive monitoring and evaluation of retained, bycatch, and ETP components have identified the impacts from the fishery. HMS management plans, bycatch reduction plans, take reduction plans, and Section 7 consultations identify the functions of these components and recommend actions. This shows understanding of these functions of the ecosystem.
	d	Y	Sufficient information is available on the impacts of the fishery on these Components to allow some of the main consequences for the ecosystem to be inferred.
			Catch information provides information on the impacts of the fishery on the components; studies from elsewhere have illustrated potential impacts of the fishery, but these impacts have not been investigated for the fishery under assessment in detail.
	e	N	Sufficient data continue to be collected to detect any increase in risk level (e.g., due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures).
			Sufficient data are being collected to detect increase in risk level from impacts on the separate components. However, additional data and analysis would improve information available to assess the increase in risk level to the trophic structure as a whole; <b>The Assessment Team consider that this scoring issue is not fully met, and therefore a condition is imposed.</b>
100	b		Main interactions between the fishery and these ecosystem elements can be inferred from existing information, and <b>have been investigated</b> .

PI 2.5.3		There is adequate knowledge of the impacts of the fishery on the ecosystem	
SG	Issue	Met? (Y/N)	Justification/Rationale
	c		The impacts of the fishery on target, Bycatch and ETP species are <b>identified</b> and the main functions of these Components in the ecosystem are <b>understood</b> .
	d		Sufficient information is available on the impacts of the fishery on the Components <b>and elements</b> to allow the main consequences for the ecosystem to be inferred.
	e		Information is sufficient to support the development of strategies to manage ecosystem impacts.
References		Okey, T.A. and R. Pugliese (2001) A preliminary Ecopath model of the Atlantic continental shelf adjacent to the Southeastern United States. University of British Columbia, Fisheries Centre Research Reports 9(4): 167-181.	
OVERALL PERFORMANCE INDICATOR SCORE:			75
CONDITION NUMBER (if relevant):			2.5

## Principle 3

Evaluation Table: PI 3.1.1

PI 3.1.1		<p>The management system exists within an appropriate legal and/or customary framework which ensures that it:</p> <ul style="list-style-type: none"> <li>Is capable of delivering sustainable fisheries in accordance with MSC Principles 1 and 2;</li> <li>Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and</li> <li>Incorporates an appropriate dispute resolution framework.</li> </ul>	
SG	Issue	Met? (Y/N)	Justification/Rationale
The evaluation of the legal and customary framework necessarily requires an examination of the management frameworks in place both at the international level (ICCAT) and at the domestic level. This is described in detail in Section 3.5.1.			
60	a	Y	<p>The management system is generally consistent with local, national or international laws or standards that are aimed at achieving sustainable fisheries in accordance with MSC Principles 1 and 2.</p> <p>The management system meets this scoring issue at the 100 scoring guidepost (which is actually identical to the same issue at the 80 and 60 levels). The fishery management system developed by the US Government for HMS, including swordfish, is consistent with the requirements of the MSFCMA. National Standard 1 contained within this Act requires sustainable fisheries. The MSFCMA also requires international cooperation specifically in the management of HMS. ATCA provides the legal basis in US law for implementing agreements reached at ICCAT with respect to US flagged vessels and US waters. The US management unit for north Atlantic swordfish coincides with that of ICCAT.</p>
	b	Y	<p>The management system incorporates or is subject by law to a <b>mechanism</b> for the resolution of legal disputes arising within the system.</p> <p>See 80b</p>
	c	Y	<p>Although the management authority or fishery may be subject to continuing court challenges, it is not indicating a disrespect or defiance of the law by repeatedly violating the same law or regulation necessary for the sustainability of the fishery.</p> <p>See 100c</p>
	d	Y	<p>The management system has a mechanism to generally respect the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.</p> <p>See 80d</p>
	b	Y	<p>The management system incorporates or is subject by law to a <b>transparent mechanism</b> for the resolution of legal disputes which is <b>considered to be effective</b> in dealing with most issues and that is appropriate to the context of the fishery.</p> <p>The MAFCMA and ATCA provide a clear legal platform for the management and control of fisheries on HMS both in relation to domestic legal requirements and those of ICCAT. Domestically these pieces of legislation and associated guidelines represent a transparent mechanism for the resolution of legal disputes and these have been both tested and proven to be effective. With respect to ICCAT, while there is a specific mechanism for monitoring compliance with legal requirements (i.e. ICCAT Recommendations) and procedures for resolving disputes between CPCs that are both customary and transparent, there is no specific dispute resolution mechanism. The need and mechanism for the establishment of a formal dispute resolution is under on-going discussion by the Working Group on the Future of ICCAT. At its most recent meeting in May 2012, the Working Group discussed the need to amend the ICCAT</p>
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PI 3.1.1		<p>The management system exists within an appropriate legal and/or customary framework which ensures that it:</p> <ul style="list-style-type: none"> <li>• Is capable of delivering sustainable fisheries in accordance with MSC Principles 1 and 2;</li> <li>• Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and</li> <li>• Incorporates an appropriate dispute resolution framework.</li> </ul>	
SG	Issue	Met? (Y/N)	Justification/Rationale
			Convention text, and the existence of models for dispute resolution schemes in international texts that are already in force. While the mechanism for the resolution of legal disputes in ICCAT is <u>considered to be effective</u> in dealing with most issues (the 80b scoring issue), pending further action by ICCAT it is difficult to conclude that this has been <u>tested and proven to be effective</u> (the 100b scoring issue).
	c	Y	<p>The management system or fishery is attempting to comply in a timely fashion within binding judicial decisions arising from any legal challenges.</p> <p>See 100c</p>
	d	Y	<p>The management system has a mechanism to <b>observe</b> the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.</p> <p>In 2001, ICCAT established its “Criteria for the Allocation of Fishing Possibilities” (ICCAT Recommendation 01-25) that included 17 criteria and nine conditions to be considered when allocating quota within the ICCAT framework (Section 3.5.3). The criteria relating to the status of the qualifying participants include the requirement to consider the needs of the coastal States of the region whose economies are overwhelmingly dependent on the exploitation of living marine resources. This is considered to meet this scoring issue (a mechanism to <u>observe</u> the legal rights) but not necessarily to <u>formally commit</u> to the legal rights (the 100d scoring issue).</p>
100	b	N	<p>The management system incorporates or subject by law to a <b>transparent</b> mechanism for the resolution of legal disputes that is appropriate to the context of the fishery and has been <b>tested and proven to be effective</b>.</p> <p>The fishery does not meet this scoring issue because ICCAT has no specific dispute resolution mechanism. While it is <u>considered to be effective</u> (the 80b scoring issue) it is difficult to conclude that this has been <u>tested and proven to be effective</u> (the 100b scoring issue). See also 80b.</p>
	c	Y	<p>The management system or fishery acts proactively to avoid legal disputes or rapidly implements binding judicial decisions arising from legal challenges.</p> <p>Despite the lack of a formal dispute resolution mechanism within ICCAT, there is evidence that the CPCs are proactive in their pursuit of legally binding management measures that avoid legal disputes. The 2008 review panel report states that in the course of ICCAT’s 40 years of existence, six Parties have presented and confirmed objections to three recommendations. Since then, there have been two more cases relating to the introduction of the electronic documentation system for bluefin tuna (one in 2008 and one currently in process). None of these objections has been in relation to swordfish. NMFS has a record of rapidly implementing binding judicial decisions arising from legal challenges.</p>
	d	N	<p>The management system has a mechanism to <b>formally commit</b> to the legal rights created explicitly or established by custom of people dependent on fishing for food and livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.</p> <p>The criteria in ICCAT Recommendation 01-25 (Criteria for the Allocation of Fishing Possibilities) relating to the status of the qualifying participants include the requirement to consider the needs of the coastal States of the region whose economies are overwhelmingly dependent on the exploitation of living marine resources. This is considered to meet SG80d (a mechanism to <u>observe</u> the legal rights) but not necessarily SG100d (a mechanism to <u>formally commit</u> to the legal rights).</p>
References		Section 3.5.1	



PI 3.1.1		<p>The management system exists within an appropriate legal and/or customary framework which ensures that it:</p> <ul style="list-style-type: none"> <li>• Is capable of delivering sustainable fisheries in accordance with MSC Principles 1 and 2;</li> <li>• Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and</li> <li>• Incorporates an appropriate dispute resolution framework.</li> </ul>	
SG	Issue	Met? (Y/N)	Justification/Rationale
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b> Overall the fishery was considered to meet all of the 60 and 80 scoring issues and the a and c scoring issues of SG100. Therefore a score of 90 was given.			90
<b>CONDITION NUMBER (if relevant):</b>			NA

Evaluation Table: PI 3.1.2

PI 3.1.2		<p>The management system has effective consultation processes that are open to interested and affected parties.</p> <p>The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties</p>	
SG	Issue	Met? (Y/N)	Justification/Rationale
60	a	Y	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are <b>generally understood</b> .
			See 100a
	b	Y	The management system includes consultation processes that obtain <b>relevant information</b> from the main affected parties, including local knowledge, to inform the management system.
			See 80b
80	a	Y	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are <b>explicitly defined and well understood for key areas</b> of responsibility and interaction.
			See 100a
	b	Y	The management system includes consultation processes that <b>regularly seek and accept relevant</b> information, including local knowledge. The management system demonstrates consideration of the information obtained.
			<p>The consultation processes at both the international and national level for this fishery are well defined with formal notification procedures, transparency with respect to membership and representation, and also decision making procedures. In particular, we note that very proactive and effective participation by US scientists and fishery managers in the deliberations and decision-making of ICCAT.</p> <p>The MSC Guidance in C.R. version 1.2 notes that for this PI the SG80 and 100 guideposts under the consultation part of the performance indicator introduce the added elements of demonstrating that <i>whatever</i> information is gathered, it is considered and that there is transparency about its use or lack of use. In the case of the U.S. domestic fishery management, this is addressed through the Advisory Committee and Advisory Panel process (Section 3.5.3 and text under 100a). With respect to ICCAT, the Independent Review has given rise to the establishment of the Working Group on the Future of ICCAT that first met in 2009 and has held two subsequent meetings in 2011 and 2012 (Section 3.5.7). This Working Group is well attended with a board membership from across the ICCAT Contracting Parties. It has identified a number of key issues for consideration flowing from the Independent Review and an internal review of the Convention, including the Precautionary Approach, ecosystem considerations, timing of entry into force of recommendations, voting rules, objection procedures and dispute settlement procedures. No specific decisions have yet been taken, but this indicates a strong commitment to consideration of proposals to address the issues raised in the Independent Review.</p>
	c	Y	The consultation process <b>provides opportunity</b> for all interested and affected parties to be involved.
100	a	Y	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are <b>explicitly defined and well understood for all areas</b> of responsibility and interaction.
			Organisations and individuals involved in the management process include both those at the international level in ICCAT and at the US national level (Section 3.5.1).
			The functions, roles and responsibilities of ICCAT in the management of tuna and

PI 3.1.2		<p>The management system has effective consultation processes that are open to interested and affected parties.</p> <p>The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties</p>	
SG	Issue	Met? (Y/N)	Justification/Rationale
			<p>tuna-like fishes in the Atlantic are well established in the ICCAT Convention and other associated texts and instruments. Functions, roles and responsibilities are explicitly defined and well understood for all areas of responsibility and interaction. The Convention establishes that ICCAT is the only organization that can undertake the range of work required for the study and management of tunas and tuna-like fishes in the Atlantic. ICCAT is responsible for the coordination of research by member countries focused on the effects of fishing on stock abundance, collection and analysis of information relative to current conditions and trends on the fishery resource in the area, and undertakes work in the compilation of data for other fish species caught incidentally, such as sharks, that are not investigated by another international fishery organization (<a href="http://www.iccat.es">www.iccat.es</a>)</p> <p>The identification of the organisations and individuals involved in the management process at the national level in the US begins with the Atlantic Tunas Convention Act (ATCA) of 1975 (16 U.S.C. 971 et. seq.), which specifies the arrangements for U.S. representation at ICCAT and the specific experience requirement for the U.S. Commissioners. Under ACTA, the U.S. Commissioners are required to constitute an Advisory Committee to the U.S. National Section to ICCAT with specific rules regarding its composition. The Advisory Committee is invited to attend all non-executive meetings of the U.S. Commissioners and, at such meetings, shall have the opportunity to examine and to be heard on all proposed programs of investigation, reports, recommendations, and regulations of the Commission. As with ICCAT, the functions, roles and responsibilities of management bodies at the national level are explicitly defined and well understood for all areas of responsibility and interaction.</p>
	<b>b</b>	<b>N</b>	<p>The management system includes consultation processes that <b>regularly seek and accept relevant</b> information, including local knowledge. The management system demonstrates consideration of the information and <b>explains how it is used or not used</b>.</p> <p>The ICCAT consultation processes have expanded in recent years, particularly with the establishment of the Working Group on the Future of ICCAT. Nevertheless, we note that some ICCAT decisions are made in a non-transparent manner in heads of delegation meetings. ICCAT also has a mixed historical record in terms of management decision making to reduce fishing mortality. This can severely undermine rebuilding efforts. The ICCAT Independent Review highlighted in particular serial failings with respect to bluefin tuna (West Atlantic, East Atlantic and Mediterranean) and noted also that the objectives of ICCAT appeared not to be met for albacore in the North Atlantic, albacore in the South Atlantic, blue marlin, white marlin and swordfish in the Mediterranean. They did, however, conclude that ICCAT objectives had been met for swordfish in the North Atlantic, swordfish in the South Atlantic, bigeye tuna and yellowfin tuna (i.e. covering all the target species for the fishery under assessment). While the early re-building of the North Atlantic swordfish stock under ICCAT management is regarded as a significant success, we note that the reduction in fishing mortality necessary to rebuild the population was due in part to market forces and social conditions, rather than effective management control.</p>
	<b>c</b>	<b>Y</b>	<p>The consultation process <b>provides opportunity and encouragement</b> for all interested and affected parties to be involved, and <b>facilitates</b> their effective engagement.</p> <p>ICCAT is open to membership from any government that is a member of the United Nations (UN), any specialized UN agency, or any inter-governmental economic integration organization constituted by States that have transferred to it competence over the matters governed by the ICCAT Convention (e.g. the EU). To date ICCAT has 48 contracting parties, including the United States and five Cooperating Non-Contracting Parties, Entities or Fishing Entities in ICCAT. The Working Group on the Future of ICCAT is actively discussing how participation can be</p>

<b>PI 3.1.2</b>		<b>The management system has effective consultation processes that are open to interested and affected parties.</b> <b>The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties</b>	
<b>SG</b>	<b>Issue</b>	<b>Met? (Y/N)</b>	<b>Justification/Rationale</b>
			<p>improved, for example through capacity building and assistance to developing states and facilitation of non-party participation.</p> <p>The U.S. HMS Advisory Panel (AP) that contributes to the development of FMPs and FMP amendments for Atlantic HMS, has a broad membership from commercial, recreational, and other interests (Section 3.5.3). Based on discussions during the assessment process, the advice of the AP is taken seriously. The deliberations of the AP are published on the NMFS web site<sup>54</sup>. The FMP development process itself comprises and an eight-phase administrative process that includes two formal public review and comment periods (Section 3.5.1).</p>
<b>References</b>		www.iccat.es	
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b> Overall the fishery was considered to meet all of the 60 and 80 scoring issues and the a and c scoring issues of SG100. Therefore a score of 90 was given.			<b>90</b>
<b>CONDITION NUMBER (if relevant):</b>			<b>NA</b>

<sup>54</sup> [http://www.nmfs.noaa.gov/sfa/hms/Advisory%20Panels/Advisory\\_Panel.htm](http://www.nmfs.noaa.gov/sfa/hms/Advisory%20Panels/Advisory_Panel.htm)

Evaluation Table: PI 3.1.3

PI 3.1.3		The management policy has clear long-term objectives to guide decision-making that are consistent with MSC Principles and Criteria, and incorporates the precautionary approach	
SG	Issue	Met? (Y/P/N)	Justification/Rationale
60	a	Y	Long-term objectives to guide decision-making, consistent with the MSC Principles and Criteria and the precautionary approach, are <b>implicit</b> within management policy
			<p>The overarching objectives of fisheries management for most large pelagic species in the Atlantic, including the North Atlantic Swordfish and many of the retained and bycatch species in the fishery under assessment are set by ICCAT. ICCAT's principle objective is to maintain populations at levels which will permit the maximum sustainable catch for food and other purposes. Since its establishment, ICCAT has implemented a wide range of tools for the conservation and management of stocks, including total allowable catch (TAC) and catch quotas (Member allocations), size limits, effort restrictions, observer programs, closed areas and seasons, vessel registration and information exchange, gear restrictions, and enforcement measures. ICCAT defines harvest control rules (HCRs) primarily through the definition of TACs intended to maintain or rebuild stocks to the MSY biomass (Section 3.5.1).</p> <p>As a Contracting Party of ICCAT, the US is obligated to implement the management measures agreed by ICCAT in accordance with its own objectives and management procedures. The US is free to impose more stringent restrictions within its own waters and on its own flag vessels, but these must not undermine the effectiveness of those measures agreed by ICCAT. US management of HMS is guided by clear objectives set out in the MSFCMA and its interaction with ICCAT is governed by both this and ACTA (see Sections 3.4.1 and 3.5.1). Guidance documents produced to help the US Fishery Management Councils and other stakeholders interpret and implement the objectives of the MSFCMA have made it clear that National Standard 1 should be interpreted as being consistent with international agreements and criteria for precautionary approaches.</p> <p>The 2008 Independent Review of ICCAT concluded that the ICCAT Convention has no provision regarding the Precautionary Approach. While ICCAT has not formally adopted the Precautionary Approach, some measures that it has adopted are based on the same principles, as contained in the UN Fish Stocks Agreement (UNFSA). There is also a continuing debate within ICCAT regarding the implementation of a Precautionary Approach to the management of its fisheries (see Section 3.5.1). At its 2011 meeting, the Working Group on the Future of ICCAT noted that the Precautionary Approach is fundamental to ICCAT's objectives and that ICCAT has already taken a number of steps to implement the Precautionary Approach. Some ICCAT Contracting Parties expressed the view that the Convention objective itself is <u>inconsistent</u> with the precautionary approach because <math>F_{MSY}</math> is considered a target rather than a limit not to be exceeded. This may require an amendment to the Convention language to enshrine the concept of the precautionary approach in ICCAT's long term objectives, although some Contracting Parties have noted that ICCAT can continue to implement the Precautionary Approach without reference to it being formally incorporated into the Convention.</p>
80	a	N	<b>Clear</b> long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach are <b>explicit</b> within management policy.
			Clear long-term objectives that guide decision-making consistent with MSC Principles and Criteria are explicit within the various layers of management policy. While these objectives may be implicitly consistent with the precautionary approach, this is not explicit, in that it is not stated explicitly within ICCAT policy documents that their objectives are required to be in accordance with the precautionary approach. By having objectives consistent with the MSC Principles and Criteria, the fishery exceeds the 60 level, but to meet fully the SG80 guidepost, ICCAT needs to formally and systematically adopt the precautionary approach, as also recommended by the 2008 Independent

PI 3.1.3		The management policy has clear long-term objectives to guide decision-making that are consistent with MSC Principles and Criteria, and incorporates the precautionary approach	
SG	Issue	Met? (Y/P/ N)	Justification/Rationale
			Review. Accordingly, a score of 70 was given, and a Condition raised for continued certification.
100	a	N	Clear long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach, are <b>explicit</b> within <b>and required by</b> management policy.
References		[List any references here]	
OVERALL PERFORMANCE INDICATOR SCORE: Overall the fishery was considered to meet the single scoring issue at 60 completely, but to meet fully the 80 guidepost, ICCAT needs to formally and systematically adopt the precautionary approach within its long term objectives. Therefore a score of 70 was given.			70
CONDITION NUMBER (if relevant):			3.1

Evaluation Table: PI 3.1.4

PI 3.1.4		The management system provides economic and social incentives for sustainable fishing and does not operate with subsidies that contribute to unsustainable fishing	
SG	Issue	Met? (Y/P/ N)	Justification/Rationale
60	a	Y	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2.
			See 80a
80	a	Y	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2, and seeks to ensure <b>that perverse incentives</b> do not arise.
			<p>The US federal management system incorporates gear and license (permit) limitations to rationalize fishing effort and restrictions on vessel upgrading within the swordfish fishery (Section 3.5.4). ICCAT has set out an elaborate series of Criteria for the Allocation of Fishing Possibilities, including the interests of artisanal, subsistence and small-scale coastal fishers; The needs of the coastal fishing communities which are dependent mainly on fishing for the stocks; the needs of the coastal States of the region whose economies are overwhelmingly dependent on the exploitation of living marine resources (Section 3.5.4).</p> <p>The US catch of north Atlantic Swordfish has consistently been below the allocation from ICCAT. The catch was 56% of the baseline level in 2011. Other ICCAT parties have requested additional North Atlantic swordfish quota to be transferred from U.S. allocation. NMFS is considering a range of management measures within Amendment 8 to the 2006 Consolidated HMS FMP to provide additional opportunities to harvest swordfish that could increase U.S. landings and more fully utilize the North Atlantic swordfish quota allocation. These include changes to vessel permitting and authorized gears, commercial catch reporting and swordfish retention limits. Changes are planned to be introduced in 2013 following and Environmental Assessment. Concern has been expressed by some stakeholders that an increase in fishing effort in the pelagic longline fishery for swordfish could increase the catch of bluefin tuna at the same time. This possibility is being considered as part of the consultation and environmental assessment process. Some options have been set out by NMFS (NMFS2011) including those that could decrease interactions between pelagic longline and bluefin tuna. This situation should be kept under review.</p> <p>There are no apparent perverse incentives (e.g. subsidies) that would encourage fishers in the U.S. swordfish fishery to fish unsustainably. Both ICCAT and the US Government have sought to avoid such a situation. The system is seeking to ensure that perverse incentives do not arise. The US Government has eliminated loan programs that previously led to government-funded overcapitalization of fisheries.</p>
100	a	N	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2, and <b>explicitly considers</b> incentives in a <b>regular review</b> of management policy or procedures to ensure they not contribute to unsustainable fishing practices.
			It is apparent that both the ICCAT and U.S. federal management provide for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2, and there is evidence that the US Government is taking action to ensure that perverse incentives do not arise. NMFS explicitly considers incentives when assessing the impacts of potential alternatives in amendments to FMPs. It is not clear, however, that this constitutes a specific regular review for the explicit consideration of incentives.
References		NMFS 2011b. Bluefin Tuna Catch in the Pelagic Longline Fishery. White Paper	

<b>PI 3.1.4</b>		<b>The management system provides economic and social incentives for sustainable fishing and does not operate with subsidies that contribute to unsustainable fishing</b>	
<b>SG</b>	<b>Issue</b>	<b>Met? (Y/P/N)</b>	<b>Justification/Rationale</b>
			prepared for the HMS Advisory Panel Meeting. September 20-22, 2011 Silver Spring, MD. September 12, 2011. Section 3.5.4
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>			<b>90</b>
<b>CONDITION NUMBER (if relevant):</b>			<b>NA</b>



Evaluation Table: PI 3.2.1

PI 3.2.1		The fishery has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2	
SG	Issue	Met? (Y/PN)	Justification/Rationale
60	a	Y	<b>Objectives</b> , which are broadly consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are <b>implicit</b> within the fishery's management system.
			See 100a
80	a	Y	<b>Short and long-term objectives</b> , which are consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery's management system.
			See 100a
100	a	Y	<b>Well defined and measurable short and long-term objectives</b> , which are demonstrably consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery's management system.
			<p>The ICCAT objective is to maintain catches at maximum sustainable levels. Management actions are taken by ICCAT to either recover stocks to the level that provides these catches, or to maintain stocks at that level. In 1999, ICCAT parties expressed within the management system for north Atlantic swordfish a commitment to rebuild North Atlantic swordfish within 10 years to the biomass that would produce MSY with a greater than 50 per cent probability. Among other things, this program included a TAC and country specific allocations. This objective was achieved three years ahead of schedule, showing that it was both well-defined and measurable.</p> <p>The US is committed to ICCAT fishery specific objectives under the terms of the MSFCMA and ACTA (Section 3.5.1). The MSFCMA itself contains a series of explicit management objectives that have been extensively interpreted in a range of guidelines containing operational definitions for fishery managers and stakeholders. The fishery under assessment is managed under a detailed Fishery Management Plan that is subject to regular review and amendment (Section 3.5.2). In addition, US fisheries are governed by a range of other legislation covering impacts on non-target species and the environment, including the National Environmental Protection Act (NEPA), the Endangered Species Act (ESA), the Marine Mammal Protection Act (MMPA), the Migratory Bird Treaty Act (MBTA), and the Coastal Zone Management Act (CZMA), the requirements of which are discussed in Section 3.7.</p>
References		Section 3.5.1	
OVERALL PERFORMANCE INDICATOR SCORE:			100
CONDITION NUMBER (if relevant):			NA

Evaluation Table: PI 3.2.2

PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives	
SG	Issue	Met? (Y/N)	Justification/Rationale
60	a	Y	There are <b>some</b> decision-making processes in place that result in measures and strategies to achieve the fishery-specific objectives.
			See 80a
	b	Y	Decision-making processes respond to <b>serious issues</b> identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take <b>some</b> account of the wider implications of decisions.
			See 80b
80	a	Y	There are <b>established</b> decision-making processes that result in measures and strategies to achieve the fishery-specific objectives.
			<p>Same as 100a</p> <p>Both ICCAT and the US Government have sophisticated and comprehensive decision-making processes that are described in Sections 3.5.1 and 3.5.3. All of these are accompanied by extensive reporting requirements and the results are readily accessible to stakeholders through searchable web-based facilities.</p> <p>The ICCAT Commission receives scientific advice on issues such as stock status and catch limits from its Standing Committee for Research and Statistics (SCRS). The Commission meets annually to review this advice and to develop conservation and management measures. ICCAT's principle objective is to maintain populations at levels which will permit the maximum sustainable catch for food and other purposes. Since its establishment, ICCAT has implemented a wide range of tools for the conservation and management of stocks, including TAC and catch quotas (Member allocations), size limits, effort restrictions, observer programs, closed areas and seasons, vessel registration and information exchange, gear restrictions, and enforcement measures. ICCAT defines HCRs primarily through the definition of TACs intended to maintain or rebuild stocks to the MSY biomass.</p> <p>Under ACTA<sup>55</sup>, the U.S. Commissioners to ICCAT are required to constitute an Advisory Committee to the U.S. National Section to ICCAT. The Advisory Committee is invited to attend all non-executive meetings of the U.S. Commissioners and, at such meetings, has the opportunity to examine and to be heard on all proposed programs of investigation, reports, recommendations, and regulations of the Commission.</p> <p>US Commissioners to ICCAT may establish species working groups for the purpose of providing advice and recommendations to the Commissioners and to the Advisory Committee on matters relating to the conservation and management of any highly migratory species covered by the Convention. Any species working group shall consist of no more than seven members of the Advisory Committee and no more than four scientific or technical personnel. The Commissioners have established four working groups: billfish, swordfish and sharks, bluefin tuna, and BAYS (bigeye, albacore, yellowfin, and skipjack) tunas.</p> <p>The advisory Committee meets twice per year, in the Spring and Fall. At the Spring meeting, the Committee meets with its Technical Advisors to discuss matters relating to ICCAT, including the previous year's ICCAT Commission meeting results; research and management activities; global and domestic initiatives related to ICCAT; the ATCA-</p>

<sup>55</sup> ATCA, the Atlantic Tunas Convention Act of 1975 (16 U.S.C. 971 et. seq.) is the implementing legislation for ICCAT in the US.

PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives	
SG	Issue	Met? (Y/N)	Justification/Rationale
			<p>required report on any identification of countries that are diminishing the effectiveness of ICCAT; the results of meetings of the Committee's Species Working Groups; and other matters relating to the international management of ICCAT species.</p> <p>The Fall meeting is held just prior to the annual meeting of the ICCAT Commisison and includes an open (public) session to consider management- and research-related information on stock status of Atlantic highly migratory species and then a closed session to discuss sensitive matters. The open session includes an opportunity for oral public comment. Interested members of the public can also submit comments by mail or email. The closed session is required to discuss sensitive information relating to the upcoming international negotiations regarding the conservation and management of Atlantic highly migratory species.</p> <p>The MSFCMA includes a specific section that addresses preparing and implementing FMPs for Atlantic HMS (16 U.S.C. §1854 (g)(1)(A-G)). A 1990 amendment to the MSFCMA gave the US Secretary of Commerce (the Secretary) the authority (effective January 1, 1992) to manage HMS in the US exclusive economic zone (EEZ) of the Atlantic Ocean, Gulf of Mexico, and Caribbean Sea. At this time, the Secretary delegated authority to manage these species to NMFS, and NMFS in turn created the HMS Management Division. This Division manages and regulates the Atlantic HMS fisheries within the United States. Because the Fishery Management Councils were not regulating HMS, NMFS established an eight-phase administrative process for creating FMPs and other rulemaking on HMS (58 FR 49966) (Section 3.5.1).</p> <p>As part of the 1996 re-authorization of the MSFCMA, NMFS established two advisory panels for Billfish and HMS (HMS AP) to assist in the development of FMPs and FMP amendments for Atlantic HMS. APs are made up of recreational and commercial fishermen, charter boat operators, buyers, sellers and consumers who are knowledgeable about a particular fishery. Under the MSFCMA, advisory panels are required to participate in all aspects of the development of the FMP or FMP amendment. They must be balanced in their representation of commercial, recreational, and other interests and consist of not less than 7 individuals who are knowledgeable about the fishery for which the plan or amendment is developed.</p> <p>NMFS holds two meetings of the HMS AP per year. The intent of these meetings is to consider alternatives for the conservation and management of highly migratory species. Decisions and recommendations made by the AP are considered to be advisory in nature.</p> <p>In addition to management under the MSFCMA, Federal fisheries operate under several other instruments of national legislation relating to Principle 2. These include the National Environmental Protection Act (NEPA), the Endangered Species Act (ESA), the Marine Mammal Protection Act (MMPA), the Migratory Bird Treaty Act (MBTA), and the Coastal Zone Management Act (CZMA). All of these laws apply to or provide protection for species and/or habitat that may be affected by the swordfish fishery.</p>
	<b>b</b>	<b>Y</b>	<p>Decision-making processes respond to <b>serious and other important issues</b> identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.</p> <p>The response to scoring issue 80a shows that both ICCAT and the U.S. Government have the capacity to consider and respond to serious and other important issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions. The successful re-building of the North Atlantic swordfish stock three years ahead of schedule provides evidence that this has actually happened.</p>
	<b>c</b>	<b>Y</b>	Decision-making processes use the precautionary approach and are based on best available information.

PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives	
SG	Issue	Met? (Y/N)	Justification/Rationale
			<p>Same as 100c</p> <p>This scoring issue requires decision-making processes to use the precautionary approach and be based on the best available information. The Assessment Team concluded that both ICCAT and the U.S. Government base their decision-making on the best available information. In addition, the management of US fisheries under the National Standard 1 contained in the MSFCMA has been interpreted as being consistent with international agreements and criteria for precautionary approaches. However, the 2008 Independent Review of ICCAT concluded that the ICCAT Convention has no provision regarding the Precautionary Approach (Hurry et al 2008) and the Assessment Team has concluded elsewhere that ICCAT does not explicitly adopt the precautionary approach in all of its objectives (under PI 3.1.3). Nevertheless, the Working Group on the Future of ICCAT has agreed that both the Precautionary Approach and the Ecosystem Approach are fundamental to ICCAT's objectives and that ICCAT has already taken a number of steps to implement them even though the terms are not contained within the Convention text.</p> <p>While ICCAT has not formally adopted the Precautionary Approach, some measures that it has adopted are based on the same principles. While there is a continuing debate within ICCAT regarding the implementation of a Precautionary Approach to the management of its fisheries, the Assessment Team concluded that decision-making with respect to the North Atlantic swordfish stock has used the precautionary approach, as evidenced by the successful re-building of the North Atlantic swordfish stock three years ahead of schedule.</p>
	<b>d</b>	<b>Y</b>	<p><b>Explanations</b> are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.</p> <p>See 100d</p>
<b>100</b>	<b>a</b>	<b>Y</b>	<p>There are <b>established</b> decision-making processes that result in measures and strategies to achieve the fishery-specific objectives.</p> <p>Same as 80a</p>
	<b>b</b>	<b>N</b>	<p>Decision-making processes respond to <b>all issues</b> identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.</p> <p>The ICCAT Convention provides in Article III (3) that decisions of the Commission shall be taken by a majority of the Contracting Parties, Cooperating non-Contracting Parties, Entities or Fishing Entities (CPCs), except where otherwise provided. An exception is made for "recommendations designed to maintain the populations of tuna and tuna-like fishes that may be taken in the Convention area at levels which will permit the maximum sustainable catch," under Article VIII. Such recommendations are to be made, inter alia, at the initiative of the Commission if an appropriate Panel on relevant species has not been established, or with the approval of at least two-thirds of all the Parties if such a Panel has been established.</p> <p>In practice, ICCAT has taken most decisions by consensus. It has been suggested by some observers that, even though it is a preferred approach rather than a mandated one for ICCAT, consensus may lead to blocking of effective decision-making. Decisions are explained in ICCAT documents. Hurry et al 2008 concluded that achieving consensus at ICCAT is becoming more difficult due to increasing membership and that the decision-making procedure may not always ensure the adoption of conservation and management measures "in a timely and effective manner".</p>

PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives	
SG	Issue	Met? (Y/N)	Justification/Rationale
			<p>As with other RFMOs, ICCAT recommendations are binding only insofar as the CPCs agree to implement them domestically. Each recommendation becomes effective for all CPCs six months after the date of the notification from the Commission. Within that six month period, one or more CPCs can present an objection to a recommendation, in which case the measure is not binding on those CPCs. In the course of ICCAT’s 40 years of existence, six Parties have presented and confirmed objections to three recommendations (Hurry et al 2008).</p> <p>The Assessment Team concluded that while both ICCAT and the US Government have sophisticated and comprehensive decision-making processes, under ICCAT, decision-making procedure may not always ensure the adoption of conservation and management measures in a timely and effective manner. For this reason, the fishery does not meet the requirements of scoring issue 100c.</p>
	c	Y	Decision-making processes use the precautionary approach and are based on best available information.
			Same as 80c
	d	Y	<b>Formal reporting</b> to all interested stakeholders describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.
			ICCAT and NMFS provide explanations for management actions through discussions at annual meetings (consensus decision making at ICCAT requires explanations of the CPC positions that result in the final decision) and through formal reporting to all interested stakeholders.
References		Hurry et al 2008 ; Section 3.5.3	
OVERALL PERFORMANCE INDICATOR SCORE: Overall the fishery was considered to meet all of the 60 and 80 scoring issues and the a, c and d, but not the b scoring issues of SG100. Therefore a score of 95 was given.			95
CONDITION NUMBER (if relevant):			NA

Evaluation Table: PI 3.2.3

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with	
SG	Issue	Met? (Y/N)	Justification/Rationale
60	a	Y	Monitoring, control and surveillance <u>mechanisms</u> exist are implemented in the fishery under assessment and there is a reasonable expectation that they are effective.
			See 80a
	b	Y	Sanctions to deal with non-compliance exist and there is some evidence that they are applied.
			See 80b
	c	Y	Fishers are <b>generally thought</b> to comply with the management system for the fishery under assessment, including, when required, providing information of importance to the effective management of the fishery.
			See 80c
80	a	Y	A monitoring, control and surveillance <b>system</b> has been implemented in the fishery under assessment and has demonstrated an ability to enforce relevant management measures, strategies and/or rules.
			<p>Information on the compliance and enforcement systems and procedures applicable to the fishery under certification is provided in Section 3.5.5.</p> <p>ICCAT has no enforcement capacity of its own. In common with other RFMOs, it relies on its Contracting Parties to implement management measures domestically, through suitable harvest control tools that will allow the stated objectives for the management of the overall fishery to be met. Through Article IX of the Convention, the Contracting Parties to the ICCAT have agreed to take all action necessary to ensure the enforcement of the Convention, and undertaken to collaborate with each other with a view to the adoption of suitable effective measures to ensure the application of its provisions, including in particular to set up “a system of international enforcement” to be applied to the Convention Area except the areas under coastal States’ national jurisdiction.</p> <p>U.S. Atlantic enforcement for ICCAT species is undertaken by the NOAA Office of Law Enforcement (OLE), the U.S. Coast Guard, and, pursuant to cooperative enforcement agreements, by States and territories with maritime boundaries in the Atlantic Ocean, Gulf of Mexico, and/or Caribbean Sea. Enforcement activities include monitoring and inspecting offloads at landing facilities and marinas in conjunction with dealer record checks and at-sea boarding and inspection. NOAA also visits a limited number of concerned recreational marinas. This system has demonstrated an ability to enforce relevant management measures.</p> <p>There are quarterly meetings of the HMS Enforcement Working Group involving NOAA Enforcement, the US Coastguard and participants from state enforcement agencies when appropriate. The agenda for these meetings includes compliance levels, strategies for changing regulations and inter-agency cooperation.</p> <p>The U.S. domestic commercial swordfish fishery is managed through a limited access permit system (Section 3.5.4). In order to ensure compliance among fishermen participating in the pelagic longline and handgear buoy swordfish fishery, various programs, including fishing logbooks, observers (longline only), port sampling, trip interviews and VMS, are used to track landings and bycatch and to ensure compliance with federal regulations.</p>

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with	
SG	Issue	Met? (Y/N)	Justification/Rationale
			The specification of the Unit of Certification for this assessment is the US East Coast, specifically statistical areas FEC, SAB, MAB, NEC, NED, SAR and NCA. This explicitly excludes the Caribbean and the Gulf of Mexico. This results in an additional requirement on the MCS system, in that it is essential to be able to demonstrate that fish taken from outside the area under certification (particularly in the Gulf of Mexico) are not being identified as having been caught within the area of certification. This is not required for compliance with the US Government or ICCAT regulations. Some additional provision over and above US domestic enforcement is therefore needed to ensure fish caught outside the area of the certification cannot be represented as being from the certified fishery. In closing out a condition for the existing FEC certification to address this issue, the client has already demonstrated an ability to meet the relevant measures, strategies, and rules through the use of VMS data.
	b	Y	Sanctions to deal with non-compliance exist, <b>are consistently applied</b> and thought to provide effective deterrence.
			The enforcement activities conducted by OLE and its partners demonstrate few serious infractions, but those infractions result in substantial penalties.. Available sanctions for violations of the regulations are specified under the MSFCMA (16 USC 1858) and include withdrawal of permit, forfeiture of catch and vessel and monetary penalties. The maximum monetary penalty is adjusted periodically for inflation and has stood at \$140,000 since 2008. The total number of enforcement cases involving ICCAT species (including swordfish) has dropped over the period 2008 to 2010, with a slight increase in 2011 (Table 29).
	c	Y	<b>Some evidence exists</b> to demonstrate fishers comply with the management system under assessment, including, when required, providing information of importance to the effective management of the fishery.
			The US uses various programs, including fishing logbooks, observers (longline only), port sampling, trip interviews and VMS, are used to track landings and bycatch and to ensure compliance with federal regulations. There have been very few cases of non-compliance in the swordfish fishery.
	d	Y	There is no evidence of systematic non-compliance.
			There is no evidence of systematic non-compliance in U.S. fisheries for ICCAT species. Enforcement results from NOAA OLE shows serious infractions are uncommon.
100	a	Y	A <b>comprehensive</b> monitoring, control and surveillance system has been implemented in the fishery under assessment and has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules.
			ICCAT has established some facilities that assist in the control of fisheries that are widely distributed across multiple jurisdictions and on the high seas, including the IUU vessel list and statistical document programs. However, ICCAT relies on its CPCs to implement management measures domestically, and exercise control over its flagged vessels and within its jurisdictional waters.
			The Assessment Team regarded the MCS system implemented by the NOAA Office of Law Enforcement (OLE), the U.S. Coast Guard, and through cooperative enforcement agreements (see comments under 80a and description in Section 3.5.5) as comprehensive and agreed it has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules.
	b	N	Sanctions to deal with non-compliance exist, are consistently applied and <b>demonstrably</b> provide effective deterrence.
			While the sanctions in place are thought to provide an effective deterrent, the Assessment Team did not have evidence that this has been clearly demonstrated.

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with	
SG	Issue	Met? (Y/N)	Justification/Rationale
	c	N	<p>There is a <b>high degree of confidence</b> that fishers comply with the management system under assessment, including, providing information of importance to the effective management of the fishery.</p> <p>According to the NMFs OLE, there have been very few cases of non-compliance in the swordfish fishery. There is a <b>high degree of confidence</b> that fishers comply with the management system under assessment, however, differences between the observer data and the logbook data with respect to bycatch and interactions with ETP species suggest that fishers could do better in terms of providing information of importance to the effective management of the fishery.</p>
References		Section 3.5.5	
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b> Overall the fishery was considered to meet all of the 60 and 80 scoring issues and the a, but not the b and c scoring issues of SG100. Therefore a score of 85 was given.			<b>85</b>
<b>CONDITION NUMBER (if relevant):</b>			<b>NA</b>



Evaluation Table: PI 3.2.4

PI 3.2.4		The fishery has a research plan that addresses the information needs of management	
SG	Issue	Met? (Y/N)	Justification/Rationale
60	a	Y	Research is undertaken, as required, to achieve the objectives consistent with MSC's Principles 1 and 2.
			See 80a
	b	Y	Research results are <b>available</b> to interested parties.
			See 100b
80	a	Y	A <b>research plan</b> provides the management system with a strategic approach to research and <b>reliable and timely information</b> sufficient to achieve the objectives consistent with MSC's Principles 1 and 2.
			<p>Research on HMS is necessarily done across the distribution of the target stock. We have therefore interpreted this PI to apply to research planned by ICCAT, the competent authority in this case, supported by active participation and contributions from US scientists. Section 3.5.6 presents details of the schedule of stock assessments undertaken by ICCAT, including those on swordfish and several retained and bycatch species in the longline fishery. This is part of the regular schedule of work undertaken by the SCRS, in which the US takes an active role (Four NOAA research scientists participated in the 2009 ICCAT Atlantic Swordfish Stock Assessment Session (in addition to the Chair of the SCRS being a NOAA scientist and six others attending the SCRS meeting) and the US contributed three papers on swordfish to that meeting.</p> <p>The last stock assessment for Atlantic swordfish was conducted in 2009. The next assessment is planned for 2013. In the meantime, the Swordfish Species Group of the SCRS meets annually to assess any new information, update the SWO Executive Summaries and develop the workplan for the following year. The 2010 annual report of the SCRS listed a series of priority actions for North and South Atlantic swordfish in 2011 based on recommendations from the Report of the 2009 Swordfish Stock Assessment Session (See Section 3.5.6).</p> <p>The 2011 Swordfish Species Group reviewed new information from Canada, which provided updated age and sex-specific nominal catch rate series for its pelagic longline fishery for the period from 2002 to 2011. The trend in CPUE indicates that relative abundance has continued to increase since the series low in 2006 and is near the historical high observed in 1990. Reports from the USA also indicate relatively high recent catch rates, and increasing average size of fish in the catch.</p> <p>In addition, the Swordfish Species Groups (Atlantic North and South and Mediterranean) are developing a research plan to address key data deficiencies associated with the stock assessments, and to investigate new stock assessment methodologies. In 2011 The SCRS reviewed an updated framework model for evaluation of biomass based limit reference points for the north Atlantic swordfish stock. The SCRS recommended further evaluation of biomass based reference limit points, to include alternative stock-recruitment hypothesis, and different selectivity patterns. The SCRS plans to continue with this work towards identifying and testing of a limit reference point prior to the next assessment (proposed for 2013).</p> <p>The written record of these meetings and activities represents a written research plan for North Atlantic Swordfish. Therefore, the research plan achieves the 80 guideline for research plan and timely information.</p> <p>With respect to P2, ICCAT has developed an Enhanced Research Program for Billfish (IERPBF) and both the General Coordinator and West Atlantic coordinator of this program are from the US. With respect to the fishery under assessment and its impacts on P2 species we conclude that this represents a strategic approach to research across</p>

PI 3.2.4		The fishery has a research plan that addresses the information needs of management	
			all three MSC Principles, and provides reliable and timely information sufficient to achieve the objectives consistent with MSC's Principles 1 and 2. The coordination between research providers afforded by their involvement in the SCRS and its specialist groups is a key factor in reaching this conclusion with respect to HMS distributed widely across the Atlantic.
	b	Y	Research results are <b>disseminated</b> to all interested parties in a <b>timely</b> fashion.
			See 100b
100	a	N	A <b>comprehensive research plan</b> provides the management system with a coherent and strategic approach to research across P1, P2 and P3, and <b>reliable and timely information</b> sufficient to achieve the objectives consistent with MSC's Principles 1 and 2.
			With respect to the comprehensiveness of the research plan, we conclude that there are some areas of planning that should be expanded in order to meet the long term management needs of the fishery, notably with respect to overall ecosystem impacts.
	b	Y	Research <b>plan</b> and results are <b>disseminated</b> to all interested parties in a <b>timely</b> fashion and are <b>widely and publicly available</b> .
			Through the activities and reporting of ICCAT and NMFS (e.g. the annual SAFE report for HMS – See Section 3.5.7), we consider that both proposed research and research results are disseminated to all interested parties in a timely fashion and are widely and publicly available.
References		Section 3.5.6	
OVERALL PERFORMANCE INDICATOR SCORE:			90
CONDITION NUMBER (if relevant):			NA

Evaluation Table: PI 3.2.5

PI 3.2.5		There is a system of monitoring and evaluating the performance of the fishery-specific management system against its objectives There is effective and timely review of the fishery-specific management system	
SG	Issue	Met? (Y/N)	Justification/Rationale
60	a	Y	The fishery has in place mechanisms to evaluate <b>some</b> parts of the management system.
			See 100a
	b	Y	The fishery-specific management system is subject to <b>occasional internal</b> review.
			See 80b
80	a	Y	The fishery has in place mechanisms to evaluate <b>key</b> parts of the management system
			See 100a
	b	Y	The fishery-specific management system is subject to <b>regular internal</b> and <b>occasional external</b> review.
			The annual performance reports submitted to ICCAT by the US Government are reviewed by ICCAT. We conclude that while NMFS performance in managing HMS fisheries, including the swordfish fishery, is subject to regular internal and external review, and ICCAT is subject to only occasional external review.
100	a	Y	The fishery has in place mechanisms to evaluate <b>all</b> parts of the management system.
			Section 3.5.7 describes the various procedures for monitoring and performance evaluation that apply to NMFS with respect to management of HMS at the national level and ICCAT at the international level. These include the annual performance reports submitted to ICCAT by the US Government and to the 2009 independent review of ICCAT.
	b	N	The fishery-specific management system is subject to <b>regular internal and external review</b> .
			The ICCAT management system is not subject to regular external review.
References		Section 3.5.7	
OVERALL PERFORMANCE INDICATOR SCORE:			90
CONDITION NUMBER (if relevant):			

## Appendix 1.2 Conditions and Client Action Plan

### Condition 1.1 Limit and Target Reference Points

#### **Relevant Performance Indicator: 1.1. Target Species Outcome**

1.1.2. Reference Points: Limit and target reference points are appropriate for the stock

SG80: Reference points are appropriate for the stock and can be estimated.

The limit reference point is set above the level at which there is an appreciable risk of impairing reproductive capacity.

The target reference point is such that the stock is maintained at a level consistent with  $B_{MSY}$  or some measure or surrogate with similar intent or outcome.

For low trophic level species, the target reference point takes into account the ecological role of the stock.

**Score:** 75

#### **Rationale:**

In relation to generic target and limit reference points (RP) under SG60, stock rebuilding was initiated in 1999 when the biomass was 65 percent of  $B_{MSY}$  or about 33 % of virgin biomass. This is taken as evidence of an implied generic limit reference point. A target reference point of MSY used in assessment and management reporting are generally considered appropriate for the stock and can be estimated.  $B_{MSY}$  (61.9 kt) and  $F_{MSY}$  (0.22), the target RPs, are provided in ICCAT (2009). A variety of age-based reference points are also available, although they are not considered appropriate for management because of weaknesses in the data. Thus, this PI is scored at least 60. Additionally, because of the availability of reference points and the implicit limits suggested by the initiation of the recovery plan in the 1990s this sub element was scored an 80.

However, under SG80, MSC Fishery Assessment Methodology (FAM) scoring guidance Section 6.2.19 states that when there is no explicitly defined LRP, a default can be used in the scoring of PI 1.1.1, this dependent on whether or not  $B_{MSY}$  is smaller or larger than 40% of virgin biomass ( $B_{40\%}$  or 49.5 kt). Since  $B_{MSY}$  is greater than  $B_{40\%}$ , the default limit reference point is  $B_{25\%}$  or 31.0 kt which is lower than the biomass when stock rebuilding action was taken in the 1990s. While the default limit reference point is likely above the level at which there is an appreciable risk of impairing reproductive capacity, this is very uncertain. Additionally, these reference points have not been formally adopted so it is unclear whether they would be used in management. Therefore, it was considered that this scoring issue was not met, and, thus, a condition was imposed.

#### **Condition and milestones:**

A limit reference point must be set above the level at which there is an appreciable risk of impairing reproductive capacity. Recognizing that ICCAT is the body responsible for the development and implementation of reference points for this stock, to address the condition the assessment team requires the client to work with NMFS and with other appropriate groups to strongly encourage ICCAT to develop and implement an explicit Limit Reference Point for North Atlantic Swordfish stock.

This condition is a continuation of a condition raised for the SE US Swordfish fishery. Upon surveillance of the Southeast US Swordfish Fishery, the client demonstrated that steps have been taken to develop an explicit Limit Reference Point (LRP) that is set above the level at which there is an appreciable risk of impairing reproductive capacity for the North Atlantic Swordfish stock (see Appendix 2).

The first annual audit of the US North Atlantic Fishery corresponds to the second annual audit of the SE US Swordfish fishery. Therefore, at the first annual audit of the North Atlantic and at each subsequent surveillance audit until the adoption of an explicit LRP, the fishery client will submit evidence that it is working actively through NMFS and the US ICCAT Advisory Committee to promote the adoption by ICCAT of an appropriate and explicit Limit Reference Point for North Atlantic Swordfish, including a summary of the actions taken by the client, the US government, and other members of ICCAT to achieve this outcome.

Prior to recertification, the SG80 scoring requirements must be met in full. ICCAT must adopt an explicit LRP for the North Atlantic swordfish stock. This LRP must be set above a stock biomass ( $t$ ) at which there is an appreciable risk of recruitment being impaired. The client will submit evidence that this is the case. At this point, the fishery will score at least 80 for PI 1.1.2.

#### **Client Action Plan:**

Day Boat Seafood LLC, has worked with National Marine Fisheries Service, the US ICCAT Advisory Committee and other appropriate groups since certification of the SE US Swordfish fishery to strongly encourage ICCAT to develop and implement an explicit Limit Reference Point (LRP) for the North Atlantic Swordfish stock, as described in ICCAT Rec. 10-02: "In 2011, a multi-year conservation and management plan will be agreed with the objective of achieving  $B_{MSY}$  with greater than 50% probability. This will be based on Limited Reference Points, consistent with the Precautionary Approach, where future decisions shall include the triggering of a rebuilding plan should the biomass decrease to a level approaching a limited reference point."

Day Boat Seafood LLC will satisfy this condition by taking an active role in all meetings of the Advisory Committee to the US Section of ICCAT that are open to the public and presenting evidence at annual audits to the CAB that it is working actively through NMFS and the Advisory Committee to promote the adoption by ICCAT of an appropriate and explicit LRP for North Atlantic Swordfish.

We attended open sessions of the March 2011 meeting and made public our commitment to MSC certification and the conditions associated with that certification. It was our intent to go directly to the leadership of the meetings and become involved in any discussions of Limit and Target Reference Points and Harvest Control Rules (Condition 1.2). We had direct discussions with Eric Schwaab, Assistant Administrator for Fisheries, Rebecca Lent, Director of International Affairs for NOAA, and Russell Smith, Deputy Asst. Secretary for International Fisheries and lead US Commissioner for the US delegation to ICCAT 2010. All voiced their support of our certification and welcomed our involvement in the activities of the Advisory Committee and ICCAT. After discussions with individual members of the Swordfish Working Group, the group made the recommendation that the "Agency should work with Canada to encourage the development of explicit swordfish TRP's as planned by the SCRS". We plan to support that recommendation as well as the formal adoption of Harvest Control Rules. We will convey our willingness to join with the Canadian groups to encourage the US and Canadian Delegations to work together to exert more pressure on ICCAT to bring about these changes.

We will continue this active role throughout our certification period by attending public meetings of the US ICCAT Advisory Committee to show our support for the development of explicit Limit Reference Points as well as the formal adoption of Harvest Control Rules. We will request an update of the progress of ICCAT towards that goal. The meetings we will attend in 2013 are as follows:

- April 4-5, 2013 Silver Spring, Maryland; US ICCAT Advisory Committee Species Working Group Meeting
- October 2013 Silver Spring, Maryland; US ICCAT Advisory Committee Species Working Group Meeting

With respect to the development of limit reference points for swordfish, the following international meetings in 2013 will be monitored and progress reported at next annual audit:

- March 11-15, 2013 Madrid, Spain; ICCAT Working Group on Stock Assessment Methods; Objective 3: Development of LRP's for ICCAT stocks – State of the art methods for developing and testing LPR's and possible application to ICCAT stocks.
- June 3-10, 2013 Madrid, Spain; SCRS Atlantic Swordfish Data Preparatory meeting
- July 10-12, 2013 Sapporo, Japan; Working Group on Convention Amendment; Agenda Item #5: Consideration of issues which may be resolved through the adoption of Recommendations and review of proposals. Precautionary Approach listed as an issue.
- September 2-10, 2013 Madrid, Spain; SCRS Atlantic Swordfish Stock Assessment Session; There is a requirement in ICCAT Recommendation 11-02 for the SCRS to develop a Limit Reference Point for the North Atlantic swordfish stock in advance of this stock assessment.
- September 30 – October 4, 2013 Madrid, Spain; Meeting of the Standing Committee on Research and Statistics
- November 18-25, 2013 Cape Town, South Africa; 23rd Regular Meeting of the International Commission for the Conservation of Atlantic Tunas

For the first surveillance audit of the SE US Swordfish fishery, Day Boat Seafood LLC presented a summary of the steps that have been taken by Day Boat Seafood, the US Government (through the US ICCAT Advisory Committee and the US Delegation) and other members of ICCAT to develop an explicit LRP for the North Atlantic Swordfish stock. This summary will be updated and presented at every surveillance audit until the adoption of an explicit LRP.

Before recertification of the US North Atlantic fishery, an explicit LPR will be in place for the North Atlantic Swordfish stock that will be set above a stock biomass (t) at which there is an appreciable risk of recruitment being impaired.

#### **Consultation on Condition:**

The US Government fisheries policy does not allow specific commitment to actions in support of any private sector certification program. However, US fishery policy specifies science-based management consistent with the 10 national standards and other requirements of the Magnuson-Stevens Fishery Conservation and Management Act (MSA). The assessment team has discussed these issues with staff at senior levels of NOAA's National Marine Fisheries Service (NMFS), and believes that the commitment to science-based management will translate into recommendations for a higher level of science-based management at ICCAT. Actions taken by the US support this

belief: at the Second Meeting of the Working Group on the Future of ICCAT, the US, Canada, Brazil, and Norway submitted a Draft Working Document on the Principles of Decisionmaking for ICCAT Conservation and Management Measures<sup>56</sup>. The draft working document contained measures to avoid overfishing of healthy stocks, to stop overfishing where it occurs, and rebuild overfished stocks. Further, given the requirements for annual catch limits (ACL) and accountability measures (AM) required in the MSA, NMFS has set internal reference points for US fisheries. The track record therefore indicates that the on-going activities of the US Government at ICCAT are already consistent with the achievement of this Condition. The CB determined that no specific further commitment by the US Government in relation to this Condition is required.

#### Condition 1.2 Harvest control rules and tools

##### **Relevant Performance Indicator: 1.2. Target Species Harvest Strategy (Management)**

1.2.2. Harvest control rules and tools: There are well defined and effective harvest control rules in place

SG80: Well defined harvest control rules are in place that are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached.

**Score: 75**

##### **Rationale:**

The assessment team considered that the second and third scoring issues of the 80 SG were met. The selection of the control rules takes into account the major uncertainties and there is available evidence that the harvest control rules used were appropriate to achieve the rebuilding goal for the stock. However, it is concluded that there was no clear evidence of formal control rules at the international level which define the extent and scope of future exploitation rates in response to the stock's status falling below target reference points or approaching limit reference points. Thus, the first scoring element under the 80SG was not met and this PI is scored at 75. Therefore, a Condition is imposed.

##### **Condition and milestones**

Well defined harvest control rules must be put in place that are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached. Recognizing that ICCAT is the body responsible for the development and implementation of control rules, to address the condition the assessment team requires the client to work with NMFS and with other appropriate groups to strongly encourage ICCAT to develop and implement control rules for North Atlantic Swordfish stock.

This condition is a continuation of a condition raised for the SE US Swordfish fishery. Upon surveillance of the Southeast US Swordfish Fishery, the client demonstrated that steps have been taken to develop harvest control rules for the North Atlantic Swordfish stock consistent with the harvest strategy that ensure reduction in exploitation rates as limit reference points are approached (see Appendix 2).

The first annual audit of the US North Atlantic Fishery corresponds to the second annual audit of the SE US Swordfish fishery. Therefore, at the first annual audit of the North Atlantic and at each subsequent surveillance audit until the adoption of control rules, the fishery client will submit

<sup>56</sup> [http://www.iccat.es/Documents/Meetings/Docs/FIWG-Report\\_ENG.pdf](http://www.iccat.es/Documents/Meetings/Docs/FIWG-Report_ENG.pdf)

evidence that it is working actively through NMFS and the US ICCAT Advisory Committee to promote the adoption by ICCAT of well defined harvest control rules for North Atlantic Swordfish, including a summary of the actions taken by the client, the US government, and other members of ICCAT to achieve this outcome.

Prior to recertification, the SG80 scoring requirements must be met in full. ICCAT must adopt explicit harvest control rules for the North Atlantic swordfish stock. The client will submit evidence that this is the case. At this point, the fishery will score at least 80 for PI 1.2.2.

This Condition closely follows Condition 1.1. While the technical issues are slightly different, one cannot have a fully functioning harvest control rule without limit reference points. Additionally, the scope of client activities to address both Conditions is expected to be essentially the same.

#### **Client Action Plan:**

Day Boat Seafood LLC, has worked with National Marine Fisheries Service, the US ICCAT Advisory Committee and other appropriate groups to strongly encourage ICCAT to develop and implement harvest control rules) for the North Atlantic Swordfish stock. This has and will occur concurrently with action on Condition 1.1, which requires similar action.

Day Boat Seafood will continue this active role throughout our certification period by attending all public meetings of the US ICCAT Advisory Committee. We will recommend to the U.S. ICCAT Advisory Committee that the US Delegation raise this point during the next ICCAT meeting.

The AC meetings we will attend in 2013 are as follows:

- April 4-5, 2013 Silver Spring, Maryland; US ICCAT Advisory Committee Species Working Group Meeting
- October 2013 Silver Spring, Maryland; US ICCAT Advisory Committee Species Working Group Meeting

With respect to the development of formal control rules at the international level which define the extent and scope of future exploitation rates in response to the swordfish stock's status falling below target reference points or approaching limit reference points, the following international meetings in 2013 will be monitored and progress reported at next annual audit:

- March 11-15, 2013 Madrid, Spain; ICCAT Working Group on Stock Assessment Methods; Objective 3: Development of LRP's for ICCAT stocks – State of the art methods for developing and testing LPR's and possible application to ICCAT stocks.
- June 3-10, 2013 Madrid , Spain; SCRS Atlantic Swordfish Data Preparatory meeting
- July 10-12, 2013 Sapporo, Japan; Working Group on Convention Amendment; Agenda Item #5: Consideration of issues which may be resolved through the adoption of Recommendations and review of proposals. Precautionary Approach listed as an issue.
- September 2-10, 2013 Madrid, Spain; SCRS Atlantic Swordfish Stock Assessment Session; There is a requirement in ICCAT Recommendation 11-02 for the SCRS to develop a Limit Reference Point for the North Atlantic swordfish stock in advance of this stock assessment.
- September 30 – October 4, 2013 Madrid, Spain; Meeting of the Standing Committee on Research and Statistics



- November 18-25, 2013 Cape Town, South Africa; 23rd Regular Meeting of the International Commission for the Conservation of Atlantic Tunas

By the first surveillance audit of the SE US Swordfish fishery, Day Boat Seafood LLC submitted evidence to show that steps have been taken to develop harvest control rules for the North Atlantic Swordfish stock that will ensure reduction in exploitation rates as limit reference points are approached.

At each subsequent surveillance audit until the adoption of harvest control rules, Day Boat Seafood LLC will present a summary of the steps that have been taken by Day Boat Seafood, the US Government (through the US ICCAT Advisory Committee and the US Delegation) and other members of ICCAT to develop harvest control rules for the North Atlantic Swordfish stock.

Before recertification, explicit harvest control rules which define the extent and scope of future exploitation rates in response to the swordfish stock's status falling below target reference points or approaching limit reference points will be in place at the international level for the North Atlantic Swordfish stock.

#### **Consultation on condition:**

The US Government fisheries policy does not allow specific commitment to actions in support of any private sector certification program. However, US fishery policy specifies science-based management consistent with the 10 national standards and other requirements of the Magnuson-Stevens Fishery Conservation and Management Act (MSA). The assessment team has discussed these issues with staff at senior levels of NOAA's National Marine Fisheries Service (NMFS), and believes that the commitment to science-based management will translate into recommendations for a higher level of science-based management at ICCAT. Actions taken by the US support this belief: at the Second Meeting of the Working Group on the Future of ICCAT, the US, Canada, Brazil, and Norway submitted a Draft Working Document on the Principles of Decision making for ICCAT Conservation and Management Measures<sup>57</sup> The draft working document contained measures to avoid overfishing of healthy stocks, to stop overfishing where it occurs, and rebuild overfished stocks. These measures would constitute a control rule if implemented by ICCAT. The track record therefore indicates that the on-going activities of the US Government at ICCAT are already consistent with the achievement of this Condition. The CB determined that no specific further commitment by the US Government in relation to this Condition is required.

#### Condition 2.1 Bycatch species – billfish

#### **Relevant Performance Indicator: PI 2.2.3 Information and Monitoring**

SG80:

b. Information is sufficient to estimate outcome status with respect to biologically based limits

d. Sufficient data continue to be collected to detect any increase in risk to main bycatch species (e.g., due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the strategy).

**Score: 75**

<sup>57</sup> [http://www.iccat.es/Documents/Meetings/Docs/FIWG-Report\\_ENG.pdf](http://www.iccat.es/Documents/Meetings/Docs/FIWG-Report_ENG.pdf).

**Rationale:**

Currently information is not sufficient to estimate outcome status with respect to biologically based limits for the stocks of white marlin, roundscale spearfish and West Atlantic sailfish. This is due to the level of uncertainty in the stock status of billfishes resulting from catches by the wider Atlantic fishery being reported as generic billfish. This uncertainty is compounded by the recent determination of a new species - the roundscale spearfish - which has previously been reported as white marlin.

Due to the scale of the fishery under assessment relative to the distribution of the stocks in question, the capacity of the client to provide sufficient information to estimate outcome status of these stocks within the period of certification is limited. Additionally, the level of bycatch in the fishery under assessment is such that it would not hinder recovery of depleted stocks. However, there are actions the fishery should take to set a standard for reporting of catch data by all fisheries impacting these stocks.

A discrepancy between logbook and observer data for many bycatch (non-retained) species suggests incomplete reporting of these species by fishermen. This increases the level of uncertainty with respect to the unobserved portion of the fleet. Improved reporting by the commercial fleet would enhance the ability to detect any increase in risk to main bycatch species.

**Condition and milestones:**

To ensure that, as a minimum, this performance indicator achieves the 80 scoring guidepost it is required that prior to the second surveillance audit, the fishery client will present sufficient information to demonstrate at-sea data collection that assures accurate accounting of interactions with white marlin, roundscale spearfish and west Atlantic sailfish.

This condition is a continuation of a condition raised for the SE US Swordfish fishery. Upon surveillance of the Southeast US Swordfish Fishery, the client presented a plan for improved data collection and/or additional research for the client group fishery that is reasonably expected to demonstrate sufficient at-sea data collection to assure accurate accounting of interactions with white marlin, roundscale spearfish and west Atlantic sailfish (see Appendix 2).

The first annual audit of the US North Atlantic Fishery corresponds to the second annual audit of the SE US Swordfish fishery. Therefore, at the first annual audit of the North Atlantic and at each subsequent surveillance audit, the fishery client will submit evidence to demonstrate at-sea data collection that assures accurate accounting of interactions with white marlin, roundscale spearfish and West Atlantic sailfish.

By the second annual audit, evidence will be provided that congruence between logbook and observer data has improved to an acceptable level and will be maintained at that level. At this point, the fishery will score at least 80 for PI 2.2.3.

**Client Action Plan**

By the first annual surveillance audit, Day Boat Seafood LLC will present a plan for improved data collection and/or additional research for the client group fishery that is reasonably expected to demonstrate sufficient at-sea data collection to assure accurate accounting of interactions with blue marlin, white marlin and Atlantic sailfish.

Data on commercial catches and landings of North Atlantic swordfish are captured through observer programs, The Florida Logbook Program and dealer reporting. To increase and verify the accuracy of the logbook reporting within the Florida East Coast region, Day Boat Seafood LLC will initiate the

following programs:

- 1) To increase accuracy in reporting bycatch of billfish and sharks (blue marlin, white marlin, roundscale spearfish, Atlantic sailfish, and dusky sharks), Day Boat Seafood LLC will develop and implement a billfish and shark identification workshop with Angler Conservation Education Inc. to improve identification of protected species. Special emphasis will be given on safe handling and release techniques to reduce mortality. All captains and crew will be required to attend the workshop. As dealers, we have attended a required Shark Identification Workshop.
- 2) Billfish and shark identification placards will be required on each longline vessel.
- 3) To improve logbook reporting, we will develop and implement a Florida Logbook Reporting workshop with Angler Conservation Education Inc. to provide a better understanding of reporting requirements with special emphasis on reporting of bycatch species and fate. All captains and selected crewmembers will be required to attend this workshop.
- 4) To verify the accuracy of logbook reporting, Day Boat Seafood LLC will set a new standard for fishery reporting – 100% observer coverage of our long line fleet. It is our intent to double our observer coverage within the first year to 20%, double the coverage in the 3<sup>rd</sup> year to 40%, in the 4<sup>th</sup> year to 80% and by our recertification, 100%.
- 5) In order to accomplish our goals, we will supplement the NMFS observer coverage from the following sources:
  - (a) An independent academic-based contracted fisheries observer program. We have investigated this source with Dr. David Kerstetter, PhD, Nova Southeastern University, who has extensive experience in the development of observer programs.
  - (b) An at-sea electronic monitoring system for our long line fleet. NMFS, Northeast Fisheries Science Center, Fisheries Sampling Branch and Archipelago Marine Research Ltd. are currently conducting an Electronic Monitoring System pilot study. We will contact the pilot project leaders for assistance in developing the monitoring system for our fleet.

Prior to the first surveillance audit, Day Boat Seafood will present a summary of actions to demonstrate the implementation of our plan for improved and verifiable at-sea data collection. We will work with NMFS and other agencies to share this information.

**Consultation on condition:**

None required; this condition is within the capacity of the client to complete.

[Condition 2.2 Endangered, threatened or protected species](#)

**Relevant Performance Indicators: PI 2.3.1 Status**

SG80

The effects of the fishery are known and are **highly likely** to be within limits of national and international requirements for protection of ETP species.

Direct effects are **highly unlikely** to create **unacceptable impacts** to ETP species.

**Score: 75**

**Rationale:**

Estimates of long-finned pilot whales are not available separately from short-finned pilot whales until 2012. It is therefore difficult to confirm that the effects on long-finned pilot whales are highly

likely to meet the PBR. Now that identification of pilot whales by species occurs, monitoring against the PBR will be possible. The determination of direct effects comes from maintaining the mortality and serious injury below the PBR. As the estimate for long-finned pilot whales is uncertain, a determination that the mortality and serious injury is below the PBR cannot be made with high likelihood.

### **Condition and milestones**

The key outcome that shall be achieved during the certification period is:

- A determination can be made that the effects of the fishery are highly likely to be within national and international requirements for protection of long-finned pilot whales.
- A determination can be made that direct effects of the fishery are highly unlikely to create unacceptable impacts to Atlantic populations of long-finned pilot whales.

In order to achieve this outcome, the following milestones are required to be met:

- Documentation that long-finned and short-finned pilot whale interactions are identified to species shall be completed by the first annual audit.
- An assessment of status of long-finned and short-finned pilot whales and determination whether the fishery under assessment is highly unlikely to create unacceptable impacts to long-finned pilot whale population shall be completed by the second annual audit and determination of measures, if necessary, to reduce impacts to acceptable levels. At this point, the fishery will score at least 80 for PI 2.3.1.

### **Client Action Plan**

We will monitor the progress of the Stock Assessment of Long-Finned Pilot Whales scheduled for 2013 that will document long-finned and short-finned pilot whale interactions. We will attend all HMS Advisory Panel Meetings scheduled in 2013. We have also accepted a position to represent the Commercial Sector on the Advisory Panel for 2013-2016.

By the second annual audit, we will present the results of the 2013 stock assessment. This will provide information to assess the status of long-finned and short-finned pilot whales. It will also provide the determination that the US North Atlantic fishery is highly unlikely to create unacceptable impacts to long-finned pilot whale population. If necessary, we will determine measures to reduce those impacts to acceptable levels.

### **Consultation on condition**

NMFS surveys marine mammal and analyses takes, including necropsies when practicable. This will provide annual counts of long-finned and short finned pilot whale interactions. NMFS has scheduled a stock assessment that will include long-finned pilot whales for 2013, which is expected to determine PBR for both species. While NMFS, by policy, cannot commit to provide actions necessary to meet MSC conditions, it has recognized the need for these actions. The MRAG Assessment Team has determined that a high probability exists that the condition will be met.

### [Condition 2.3 Endangered, threatened or protected species](#)

#### **Relevant Performance Indicators: PI 2.3.2 Management**

There is **evidence** that the strategy is being implemented successfully.

**Score:** 75

#### **Rationale:**

The specification of the pelagic longline take reduction plan that the fishery use mainlines of 20 n mi or less in the MAB has not been effectively implemented. NMFS has presented information that observer data show approximately 60% of the sets use mainlines longer than 20 n mi, and that logbook data show approximately 40% of the sets use mainlines longer than 20 miles.

#### **Condition and milestones**

The key outcome that shall be achieved during the certification period is:

- There is evidence that the 20 mile limit on pelagic longline length in the MAB is successfully implemented.

In order to achieve this outcome, the following milestones are required to be met:

- Evidence must be presented by the first annual audit that measures are in place to limit longline length in the MAB to no more than 20 miles.
- Evidence must be presented by the second annual audit that measures have successfully limited longline length in the MAB to no more than 20 miles. At this point, the fishery will score at least 80 for PI 2.3.2.

#### **Client Action Plan**

We will present evidence at the first annual audit that measures are in place to limit longline length in the MAB to no more than 20 miles. This may, for example, require vessels to plot beginning and end of each set with VMS so that track lines of sets can be measured at least approximately.

At the second annual audit, evidence will be presented that those measures have successfully limited longline length in the MAB to no more than 20 miles.

#### **Consultation on condition**

None required; this condition is within the capacity of the client to complete.

### [Condition 2.4 Endangered, threatened or protected species](#)

#### **Relevant Performance Indicators: PI 2.3.3 Information and Monitoring**

Relevant information is collected to support the management of fishery impacts on ETP species

SG80

b. Information is **sufficient** to determine whether the fishery may be a threat to protection and recovery of the ETP species.

**Score:** 75

**Rationale:**

The POP coverage is deemed by NMFS to be sufficient to meet precision requirements for monitoring of ETP species across the entire US Atlantic pelagic longline fleet. While the observer coverage may not be sufficient to make appropriate estimates of takes for specific management regions, the unit of certification encompasses numerous areas such that NMFS considers the area-wide estimates are sufficient.

However, a discrepancy between logbook and observer data for ETP species suggests incomplete reporting of interactions with these species by fishermen. This increases the level of uncertainty with respect to the unobserved portion of the fleet. Improved reporting by the commercial fleet would enhance the ability to determine whether the fishery may be a threat to protection and recovery of ETP populations.

**Condition and milestones**

The key outcome that shall be achieved during the certification period is:

- Information from the fishery under assessment shall be sufficient to determine whether it may be a threat to the protection and recovery of ETP species.

In order to achieve this outcome, the following milestones are required to be met:

- By the first annual surveillance audit, the fishery client will present a plan for improved at-sea data reporting that will minimize the discrepancy between logbook and observer data.
- By the second annual audit, evidence will be provided that congruence between logbook and observer data has improved to an acceptable level and will be maintained at that level. At this point, the fishery will score at least 80 for PI 2.3.3.

**Client Action Plan**

Based on our plans for improved at-sea data in the Southeast US Swordfish fishery, we will present a plan for improved at-sea data in the entire US Atlantic by the first annual audit.

By the second annual audit, evidence will be provided that the congruence between logbook and observer data has improved to an acceptable level and will be maintained.

**Consultation**

None required; this condition is within the capacity of the client to complete.  
There is adequate knowledge of the impacts of the fishery on the ecosystem

[Condition 2.5 Ecosystems](#)**Relevant Performance Indicator: 2.5.3 Information and Monitoring**

There is adequate knowledge of the impacts of the fishery on the ecosystem

SG 80: Sufficient data continue to be collected to detect any increase in risk level (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures).

**Score: 75**

**Rationale:**

Catch information is available across a wide number of species taken by the fishery under assessment, including discard rate and additional biological data collected by observers, enabling trends to be monitored for species or species groups by the relevant management bodies. However, this information is not used to assess potential impacts on trophic structure or other ecosystem components potentially impacted by the fishery under assessment.

**Condition and milestones:**

Directed research into ecosystem effects of the fishery is required, with the aim of developing an assessment of the level of risk to the ecosystem from the fishery under assessment by the third annual audit.

The objective of this risk assessment will be to assess the likelihood that the fishery has disrupted and/or will disrupt in the future the key elements of the underlying ecosystem structure and function to a point where there would be serious or irreversible harm (PI 2.5.1 SG80). It shall include an assessment of possible changes in the level of risk, for example, due to changes in the operation of the fishery, or the effectiveness of management measures and will be of a standard commensurate with publication in a peer reviewed scientific journal.

This condition is a continuation of a condition raised for the SE US Swordfish fishery. Upon surveillance of the SE US Swordfish Fishery, the client demonstrated that while special projects that are expected to provide useful information for management of swordfish and non-target species have been initiated, they are awaiting feedback from their researchers regarding progress on how the proposed research will assess the threats to trophic and other ecosystem structure from removal of apex predators. This condition was only partially met at the time of the first annual audit for the SE US Swordfish Fishery, therefore the timeline has been adjusted to require both the first and second milestones from the condition on the SE US Swordfish fishery to be met by the first annual audit.

To show progress towards this specific outcome, the following additional milestones are required to be met:

- By the first annual audit a research plan shall be independently developed detailing the scientific procedure by which the risk assessment shall be implemented and a progress report on the risk assessment shall be provided detailing problems encountered (e.g. insufficient information) and measures proposed to overcome these problems.
- The risk assessment shall be updated annually and reviewed at the second annual audit and subsequent audits.
- By the fourth annual audit, the risk assessment will show that sufficient data have been collected to detect any increase in risk level to the fishery. At this point, the fishery will score at least 80 for PI 2.5.3.

**Client Action Plan**

Day Boat Seafood will contract with a qualified scientist to conduct directed research to determine the risk to the ecosystem and will measure the likelihood of current or future disruption of the key elements of the ecosystem structure and function to a point where serious or irreversible harm would occur. This project will determine the relationship of possible changes in risk level to changes in fishery operations or management measures. This risk assessment will be of a standard commensurate with publication in a peer-reviewed scientific journal.

Progress towards the risk assessment will have the following milestones:

By the first annual audit, a research plan will be presented detailing the scientific procedures to be implemented and a progress report will be presented detailing any problems encountered and proposed measures to overcome these problems.

By the third annual audit, a determination of the risk to the ecosystem from the fishery under assessment will be presented.

By the fourth annual audit, the risk assessment will be updated and reviewed to determine that sufficient data have been collected to detect any increase in risk level to the fishery.

Prior to recertification, the risk assessment will be updated and reviewed to determine that sufficient data continue to be collected to detect any increase in risk level to the fishery.

### **Consultation**

None required; this condition is within the capacity of the client to complete.

### **Condition 3.1 Governance and Policy**

#### **Relevant Performance Indicators:**

##### **3.1.3 Long Term Objectives**

SG 80: Clear long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach are explicit within management policy.

**Score:** 70

#### **Rationale:**

Clear long-term objectives that guide decision-making consistent with MSC Principles and Criteria are explicit within the various layers of management policy. While these objectives may be implicitly consistent with the precautionary approach, this is not explicit, in that it is not stated explicitly within ICCAT policy documents that their objectives are required to be in accordance with the precautionary approach. By having objectives consistent with the MSC Principles and Criteria, the fishery exceeds the 60 level, but to meet fully the SG80 guidepost, ICCAT needs to formally and systematically adopt the precautionary approach, as also recommended by the 2008 Independent Review. Accordingly, a score of 70 was given, and a Condition raised for continued certification.

#### **Condition and milestones:**

Evidence is required that ICCAT has adopted long term management objectives that formally and systematically incorporate the precautionary approach within its decision making framework. This action should be coordinated with the action required under Condition 1.1.

Prior to re-certification, evidence must be presented by the fishery client that shows that ICCAT has formally agreed a policy for application of the precautionary approach in setting long term objectives that guide decision-making. At this point, the fishery will score at least 80 for PI 3.1.3.



This condition is a continuation of a condition raised for the SE US Swordfish fishery. Upon surveillance of the Southeast US Swordfish Fishery, the client demonstrated that the US Government had taken steps to encourage the adoption at ICCAT of a policy for application of the precautionary approach to fishery management decisions within its competency (see Appendix 2).

The second annual audit of the US North Atlantic Fishery corresponds to the third annual audit of the SE US Swordfish fishery. Therefore, by the second annual audit of the North Atlantic there must be evidence that ICCAT is taking steps towards the adoption of a policy for application of the precautionary approach to fishery management decisions within its competency.

### **Client Action Plan**

By the first annual audit, Day Boat Seafood LLC will present a summary of the steps that have been taken by the US Government to encourage the adoption of a policy for application of the precautionary approach to fishery management decisions within its competency.

As explained in Condition 1.1 and 1.2, we plan to satisfy this condition by taking an active role in public meetings of the Advisory Committee to the US Section of ICCAT. We attended open sessions of the March 2011 meeting and made public our commitment to MSC certification and the conditions associated with that certification. It was our intent to go directly to the leadership of the meetings and become involved in any discussions of adoption of a policy for application of the precautionary approach to fishery management decisions.

We had direct discussions with Eric Schwaab, Assistant Administrator for Fisheries, Rebecca Lent, Director of International Affairs for NOAA, Russell Smith, Deputy Asst. Secretary for International Fisheries and lead US Commissioner for the US delegation to ICCAT 2010. All voiced their support of our certification and welcomed our involvement in the activities of the Advisory Committee and ICCAT. We will convey our willingness to join with the Canadian groups to encourage the US and Canadian Delegations to work together to exert more pressure on ICCAT to bring about these changes.

We plan to continue this active role throughout our certification period by attending all public meetings of the US ICCAT Advisory Committee.

The AC meetings we will attend in 2013 are as follows:

- April 4-5, 2013 Silver Spring, Maryland; US ICCAT Advisory Committee Species Working Group Meeting
- October 2013 Silver Spring, Maryland; US ICCAT Advisory Committee Species Working Group Meeting

With respect to the development of clear long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach, the following international meetings in 2013 will be monitored and progress reported at next annual audit:

- March 11-15, 2013 Madrid, Spain; ICCAT Working Group on Stock Assessment Methods; Objective 3: Development of LRP's for ICCAT stocks – State of the art methods for developing and testing LPR's and possible application to ICCAT stocks.
- June 3-10, 2013 Madrid, Spain; SCRS Atlantic Swordfish Data Preparatory meeting
- July 10-12, 2013 Sapporo, Japan; Working Group on Convention Amendment; On the agenda for this meeting is the application of the Precautionary Approach and Decision-making

processes and procedures: Agenda Item #5: Consideration of issues which may be resolved through the adoption of Recommendations and review of proposals. Precautionary Approach listed as an issue.

- September 2-10, 2013 Madrid, Spain; SCRS Atlantic Swordfish Stock Assessment Session; There is a requirement in ICCAT Recommendation 11-02 for the SCRS to develop a Limit Reference Point for the North Atlantic swordfish stock in advance of this stock assessment.
- September 30 – October 4, 2013 Madrid, Spain; Meeting of the Standing Committee on Research and Statistics
- November 18-25, 2013 Cape Town, South Africa; 23rd Regular Meeting of the International Commission for the Conservation of Atlantic Tunas

By the second annual audit, Day Boat Seafood LLC will present a summary of the steps that have been taken by ICCAT toward the adoption of a policy for application of the precautionary approach to fishery management decisions within its competency.

Before recertification, Day Boat Seafood LLC will present evidence of a formal agreement by ICCAT to a policy that incorporates the precautionary approach in setting long term objectives that guide decision-making, as well as in the decision-making process itself.

#### **Consultation on condition**

The US Government fisheries policy does not allow specific commitment to actions in support of any private sector certification program. However, US fishery policy specifies science-based management consistent with the 10 national standards and other requirements of the Magnuson-Stevens Fishery Conservation and Management Act (MSA). The assessment team has discussed these issues with staff at senior levels of NOAA's National Marine Fisheries Service (NMFS), and notes that the commitment to science-based management has already translated into recommendations by the US Government for the establishment of long term objectives and decision-making processes at ICCAT that are explicitly consistent with the Precautionary Approach. At the Second Meeting of the Working Group on the Future of ICCAT, the US, Canada, Brazil, and Norway submitted a Draft Working Document on the Principles of Decision making for ICCAT Conservation and Management Measures.<sup>58</sup> The draft working document contained an outline for a decision-making framework that would be consistent with the Precautionary Approach. The Working Group itself noted that both the Precautionary Approach and the Ecosystem Approach are fundamental to ICCAT's objectives. ICCAT is currently assessing whether the precautionary approach to fisheries management should be explicitly included in the Convention through an amendment to the Convention text. The track record therefore indicates that the on-going activities of the US Government at ICCAT are already consistent with the achievement of this Condition. The CB determined that no specific further commitment by the US Government in relation to this Condition is required.

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<sup>58</sup> [http://www.iccat.es/Documents/Meetings/Docs/FIWG-Report\\_ENG.pdf](http://www.iccat.es/Documents/Meetings/Docs/FIWG-Report_ENG.pdf).

## Appendix 2. Client performance against SE US Swordfish Conditions

### Progress Report of Day Boat Seafood LLC on the Conditions and Recommendations associated with Certification

# 1

#### Condition 1. 1. Limit and Target Reference Points

##### Relevant Performance Indicator: 1.1. Target Species Outcome

#### Condition

By the first surveillance audit, the fishery client must present evidence to demonstrate that steps have been taken to develop an explicit Limit Reference Point (LRP) that is set above the level at which there is an appreciable risk of impairing reproductive capacity for the North Atlantic Swordfish stock.

#### Client Actions

We have continued to support the development and implementation of an explicit Limit Reference Point for the North Atlantic Swordfish Stock consistent with the Precautionary Approach, where future decisions shall include the triggering of a rebuilding plan should the biomass decrease to a level approaching a limited reference point.

We submitted a letter outlining our support to Dr. John Graves, Chairman of the Advisory Committee to the US Section of ICCAT. (attached) during the October 2011 meeting.

We completed a registration to be an observer at the 2011 ICCAT Annual Meeting, but registration was denied due to late submission.

Attended March 2012 meeting, but did not attend October 2012 meeting due to lack of public sessions. We plan to attend the Meeting in March 2013.

We have been in contact with Rebecca Lent and others in the Department of International Affairs regarding research we are undertaking, affirming our support of the LRP, formal harvest control rules and the adoption of a policy for application of the precautionary approach to management.

In the "Recommendation by ICCAT for the Conservation of North Atlantic Swordfish" (11-02) entered into force June 7, 2012, Recommendation 4 states:

"In advance of the next assessment of North Atlantic swordfish, the SCRS shall develop a Limit Reference Point (LPR) for this stock. Future decisions on the management of this stock shall include a measure that would trigger a rebuilding plan, should the biomass decrease to a level approaching the defined LRP as established by the SCRS."

The next assessment for swordfish is 2013.

#### MRAG Evaluation

The client has presented evidence that ICCAT has directed SCRS to develop an explicit Limit Reference Point (LRP) that is set above the level at which there is an appreciable risk of impairing reproductive capacity for the North Atlantic Swordfish stock.

While the LRP has not been developed, the condition is on schedule.

## 2

### Condition 1. 2. Harvest control rules and tools

#### Relevant Performance Indicator: 1.2. Target Species Harvest Strategy (Management)

##### Condition

By the first surveillance audit, the fishery client must present evidence to demonstrate that steps have been taken to develop harvest control rules for the North Atlantic Swordfish stock consistent with the harvest strategy that ensure reduction in exploitation rates as limit reference points are approached.

##### Client Actions

We have continued to support the development and implementation of an explicit Limit Reference Point for the North Atlantic Swordfish Stock consistent with the Precautionary Approach, where future decisions shall include the triggering of a rebuilding plan should the biomass decrease to a level approaching a limited reference point.

We submitted a letter outlining our support to Dr. John Graves, Chairman of the Advisory Committee to the US Section of ICCAT. (attached) during the October 2011 meeting.

We completed a registration to be an observer at the 2011 ICCAT Annual Meeting, but registration was denied due to late submission.

Attended March 2012 meeting, but did not attend October 2012 meeting due to lack of public sessions. We plan to attend the Meeting in March 2013.

We have been in contact with Rebecca Lent and others in the Department of International Affairs regarding research we are undertaking, affirming our support of the LRP, formal harvest control rules and the adoption of a policy for application of the precautionary approach to management.

In the "Recommendation by ICCAT for the Conservation of North Atlantic Swordfish" (11-02) entered into force June 7, 2012, Recommendation 4 states:

"In advance of the next assessment of North Atlantic swordfish, the SCRS shall develop a Limit Reference Point (LPR) for this stock. Future decisions on the management of this stock shall include a measure that would trigger a rebuilding plan, should the biomass decrease to a level approaching the defined LRP as established by the SCRS."

The next assessment for swordfish is 2013.

##### MRAG Evaluation

The client has presented evidence that ICCAT has directed future management decisions to include a measure that would trigger a rebuilding plan, should the biomass decrease to a level approaching the defined LRP.

While the control rule has not been developed, the condition is on schedule.

### 3

#### Condition 2.1. Bycatch species – billfish

#### Relevant Performance Indicator: PI 2.2.3 Information and Monitoring

##### Condition

By the first annual surveillance audit, the fishery client will present a plan for improved data collection and/or additional research for the client group fishery that is reasonably expected to demonstrate sufficient at-sea data collection to assure accurate accounting of interactions with blue marlin, white marlin and Atlantic sailfish

##### Client Actions

To increase the accuracy of reporting bycatch of billfish and sharks, we worked with Angler Conservation Education Inc. to develop a Special Protected Species Workshop with an emphasis on billfish and shark identification and safe handling and release techniques. The workshop was conducted in Ft. Pierce, FL on March 9, 2012. NMFS has records of attendance at the workshop.

Billfish and shark identification placards were obtained and placed on each longline vessel.

Our plan of a Logbook Reporting workshop has been ongoing, but this workshop will be postponed until mid-2013. We investigated several electronic logbook programs, but none would successfully work with our custom software without major changes. We are currently working on adding an additional module to our system, which will include logbook data for each catch, and plan to design an electronic entry system that will make logbook reporting easier for the captain and immediately available for timely reporting.

We have been reporting catch data for the Trip Ticket program by direct downloads for some time, but that system had been modified to include the logbook information required for the reporting of HMS species. Electronic reporting will start on January 1, 2013, and we are currently modifying our system to collect the additional data. When implemented, we will conduct the training workshop.

In an effort to verify the accuracy of logbook reporting, we have taken several steps to accomplish our goal of 20% observer coverage of our fleet within the first year.

We have developed an at-sea electronic monitoring system for our long line fleet. On the vessel Day Boat One, we have installed a camera in a fixed position that affords an unobstructed view of the hauling station for species identification. The mobile DVR has dual SD cards that can be removed and inserted into a PC for viewing the video. The camera and DVR are secure; and the SD cards will be retrieved and sent to our Lake Park office where the video will be reviewed. The video will be compared with the data from logbooks and observers and and discrepancies brought to the attention of the captain for explanation. We plan to add other vessels as we understand better the time involved in conducting the video review.

To supplement the NMFS observer coverage, we have committed to a research program with Dr. David Kerstetter, PhD and Nova Southeastern University. The program will significantly boost our observer coverage. We are working with Dr. Kerstetter to ensure that the data collection method meets current NMFS standards.

##### MRAG Evaluation

The client has presented evidence that it has conducted billfish and sailfish identification training, has measures underway to enhance reporting through electronic logbooks, and has plans to confirm logbook entries through increased observer coverage.

While the improved data are not yet available, the condition is on schedule.

# 4

## Condition 2.2 Endangered, threatened or protected species

### Relevant Performance Indicators:

#### PI 2.3.1 Status

##### Condition

An assessment of the level of information required to determine whether the fishery under assessment may be a threat to the recovery of Atlantic loggerhead and leatherback turtles shall be completed by the first annual audit.

##### Client Action

We are in the planning stages of funding a research plan that, as one of its outcomes, will provide an assessment of the information necessary to determine if our fishery is a threat to the recovery of the Atlantic loggerhead and leatherback turtles. This project will depend on issuance of an Exempted Fishing Permit and approval that the data collected with Pelagic Observer Program protocols is compatible with on-going NOAA databases of catch and effort.

In an effort to verify the accuracy of logbook reporting of interactions with ETP, we have taken several steps to accomplish our goal of 20% observer coverage of our fleet within the first year.

We have developed an at-sea electronic monitoring system for our long line fleet. On the vessel Day Boat One, we have installed a camera in a fixed position that affords an unobstructed view of the hauling station for species identification. The mobile DVR has dual SD cards that can be removed and inserted into a PC for viewing the video. The camera and DVR are secure; and the SD cards will be retrieved and compared to the vessel trip report.

To supplement the NMFS observer coverage, we have committed to a program with Dr. David Kerstetter, PhD and Nova Southeastern University that will significantly boost our observer coverage. We are working with Dr. Kerstetter to ensure that the data collection methods meet current NMFS standards.

We have worked to increase swordfish buoy gear participation (buoy gear has less interaction than longlines with billfish and turtles) in several ways:

We have worked with our customers to increase demand and price for buoy gear fish. Display (head-on) swordfish are often requested for retail promotions. We have seen an increase in the sales price of buoy swordfish, returning a higher price to the fisherman.

We have suggested to the September 2012 HMS Advisory Panel that a modification of the amount of allowable gear for buoy fishing would provide a financial incentive for buoy gear participation.

We have proposed the retention of bycatch in the buoy gear fishery; if fishermen were able to retain other desirable species such as mahi-mahi and tuna, the revenue to the fisherman would increase.

We have voiced our opinion against increasing the number of hand gear permits as a means of increasing swordfish catch in the south Atlantic area. Modifying existing permits, such as Swordfish Incidental to be hand gear authorized would allow additional entrants into the buoy gear fishery.

Participated in project exploring the use of buoy gear in Turkey; hosted Turkish fishermen on several buoy gear trips with participating fishermen to observe actual use of the gear.

#### MRAG Evaluation

The client has presented evidence that meeting the condition would require additional data collection that would occur as part of the electronic logbook and enhanced observer coverage program. However, the assessment of the information necessary is still in the planning stage.

The condition is only partially on schedule, and the client must complete the first milestone and address the second milestone by the second annual audit.

## 5

### **Condition 2.3 Endangered, threatened or protected species**

#### **Relevant Performance Indicators:**

#### **PI 2.3.3 Information and Monitoring**

#### **Condition**

An assessment of the level of information required to determine whether the fishery under assessment may be a threat to the recovery of Atlantic loggerhead and leatherback turtles shall be completed by the first annual audit.

#### **Client Action**

We are in the planning stages of funding a research plan that, as one of its outcomes, will provide an assessment of the information necessary to determine if our fishery is a threat to the recovery of the Atlantic loggerhead and leatherback turtles. This project will depend on issuance of an Exempted Fishing Permit and approval that the data collected with Pelagic Observer Program protocols is compatible with on-going NOAA databases of catch and effort.

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We have voiced our opinion against increasing the number of hand gear permits as a means of increasing swordfish catch in the south Atlantic area. Modifying existing permits, such as Swordfish Incidental to be hand gear authorized would allow additional entrants into the buoy gear fishery.

Participated in project exploring the use of buoy gear in Turkey; hosted Turkish fishermen on several buoy gear trips with participating fishermen to observe actual use of the gear.

#### MRAG Evaluation

The client has presented evidence that meeting the condition would require additional data collection that would occur as part of the electronic logbook and enhanced observer coverage program. However, the assessment of the information necessary is still in the planning stage.

The condition is only partially on schedule, and the client must complete the first milestone and address the second milestone by the second annual audit.

## 6

### Condition 2.4. Ecosystems

#### Relevant Performance Indicator: 2.5.3 Information and Monitoring

Catch information is available across a wide number of species taken by the fishery under assessment, including discard rate and additional biological data collected by observers, enabling trends to be monitored for species or species groups by the relevant management bodies. However, this information is not used to assess potential impacts on trophic structure or other ecosystem components potentially impacted by the fishery under assessment.

#### Condition

Directed research into ecosystem effects of the fishery is required, with the aim of developing an assessment of the level of risk to the ecosystem from the fishery under assessment by the third annual audit.

The objective of this risk assessment will be to assess the likelihood that the fishery has disrupted and/or will disrupt in the future the key elements of the underlying ecosystem structure and function to a point where there would be serious or irreversible harm (PI 2.5.1 SG80). It shall include an assessment of possible changes in the level of risk, for example, due to changes in the operation of the fishery, or the effectiveness of management measures and will be of a standard commensurate with publication in a peer reviewed scientific journal.

To show progress towards this specific outcome, the following additional milestones are required to be met:

- A research plan shall be independently developed by the first annual audit detailing the scientific procedure by which the risk assessment shall be implemented.



## Client Action

We are funding the second phase of a scientific study by Dr. David Kerstetter PhD and are awaiting feedback from him with respect to meeting this condition.

## MRAG Evaluation

The client has initiated special projects that are expected to provide useful information for management of swordfish and non-target species. The client is awaiting feedback from their researchers regarding progress on how the proposed research will assess the threats to trophic and other ecosystem structure from removal of apex predators.

The condition is only partially on schedule, and the client must complete the first milestone and address the second milestone by the second annual audit.

# 7

## **Recommendation 2.1 Endangered, threatened or protected species**

### **PI 2.3.3 Information and Monitoring**

## Recommendation

Fisheries outside of the area in which the fishery under assessment operates are likely to impact loggerhead and leatherback populations to a much greater extent but information from these fisheries remains limited.

The client is encouraged to work with the appropriate agencies to check on the implementation of this ICCAT Recommendation within the required timelines through their continued support to the activities of the ICCAT Compliance Committee.

## Client Action

We plan to attend the spring 2013 meeting of the Advisory Panel to the US Delegation to ICCAT.

We continue to monitor the progress of Recommendation 10-9 thru the reports of the SCRS and the Sub-Committee on Ecosystems.

## **SCRS Report October 2011**

### ***18.8 Response to the Commission Regarding Rec. 10-09***

During the 2011 Species Groups meetings the Sub-Committee on Ecosystems met and reviewed progress toward meeting the data submission requirements outlined in Rec.10-09.

In 2011, the Sub-Committee on Ecosystems reviewed five working papers and two presentations addressing turtle by-catch in the Convention area. As with seabirds, factors were identified contributing to the number of encounters along with effective mitigation measures. The Group also viewed documentation geared towards educating fishers on proper gear removal and handling techniques. A description of a capacity building program, the Trans Atlantic Leatherback Conservation Initiative Program, was provided.

To expedite the evaluation of the impact of ICCAT fisheries on sea turtle populations [Rec. 10-09], the ICCAT Secretariat, the SCRS Chair and the Convener of the Sub-Committee on Ecosystems developed a call for tenders to hire a Sea Turtle Expert. The contract has been awarded and work is scheduled to begin in the first quarter of 2012. The contract is for a 6 months term and one of the final deliverables will be the database containing the information needed to conduct the impact assessment. The Sea Turtle Expert, through the Secretariat, will also coordinate efforts to identify and contact national scientists with expertise in sea turtles, by-catch estimation procedures or analytical techniques used to conduct impact assessments on by-catch species. The Sub-Committee on Ecosystems will coordinate with the Sea Turtle Expert to facilitate this process. The Sub-Committee on Ecosystems also established a work plan for activities in 2012 relating to Rec. 10-09.

During 2012, the Sea Turtle Expert, in cooperation with the Sub-Committee on Ecosystems and the Secretariat, will identify and compile the following:

1. Sea turtle by-catch data sources
2. Gaps in knowledge
3. Methodologies used to extrapolate total by-catch using data from the reporting fleets
4. Methods to estimate post-release mortality.
5. Impact assessment methodologies that may appropriate to implement given the available data.

The Sub-Committee will meet in 2012 to review this information and make recommendations with regard to the utility of the methodologies described in items 3-5. National scientists identified by the CPCs and selected by the Sea Turtle Expert as possessing expertise in these methodologies will be encouraged to attend.

#### ***9.5 Inter-sessional Meeting of the Sub-Committee on Ecosystems July 2-6, 2012***

The inter-sessional meeting of the Sub-Committee on Ecosystems was held in Sète, France, July 2-6, 2012.

During this meeting, the Sub-Committee discussed the following:

##### ***1) By-catch***

- The data preparatory work and review of methodologies to assess the impact of ICCAT fisheries on sea turtles (Rec. [10-09]).
- A review of the form prepared by the Secretariat and the information provided by CPCs on scientific observer program information requested under ICCAT Rec. 10-10.
- The definition and coordination of the work of the restructured Sub-Committee which includes two section rapporteurs; one responsible for by-catch assessment and mitigation, and the second for ecosystem issues and issues related to Ecosystem Based Fisheries Management (EBFM).
- The continuation provision of results on research about the impacts of mitigation measures on catch rates of by-catch and target species.
- The definition of the strategy to evaluate the efficacy of the seabird by-catch mitigation measures defined under Rec. [11-09].

#### ***SCRS Plenary Sessions 9 to 21***

##### ***Discussion***

It was confirmed that the Sub-Committee will be investigating the impact of ICCAT fisheries on sea turtles in 2013 and will not be conducting assessments of the species as the data for this is unavailable and there is no mandate. The Secretary of the Inter-American Convention for the Protection and Conservation of Sea Turtles (IAC) expressed the convention's support for the work to be conducted by ICCAT and agreed to co-operate and provide information as possible to facilitate the work to be conducted in 2013.

#### ***SCRS Report October, 2012***

##### ***18.9 Evaluate sea-turtle data provided by CPCs and by-catch mitigation information [Rec. 10-09].***

Information on turtle bycatch and bycatch mitigation measures was provided by CPCs and was evaluated by the SCRS. The Committee also reviewed available methodologies for assessing the impact of ICCAT fisheries on sea turtle populations. As directed by the Commission, the Committee plans to complete the analysis and prepare a response to the Commission in 2013.

#### **MRAG evaluation**

The client has demonstrated that it is monitoring the discussions and recommendations at ICCAT concerning reductions in interactions with loggerhead and leatherback sea turtles. Active client support for ICCAT-recommended actions that reduce these interactions would help improve the protection for these species.

While the precautionary approach has not been implemented, Condition 3.1 is on schedule.

## 8

### Condition 3.1 Governance and Policy

#### Relevant Performance Indicators:

##### 3.1.3 Long Term Objectives

#### Condition

By the first annual audit the US Government has taken steps to encourage the adoption at ICCAT of a policy for application of the precautionary approach to fishery management decisions within its competency.

#### Client Action

We have continued to support the development and implementation of an explicit Limit Reference Point for the North Atlantic Swordfish Stock consistent with the Precautionary Approach, where future decisions shall include the triggering of a rebuilding plan should the biomass decrease to a level approaching a limited reference point.

We have been in contact with Rebecca Lent and others in the Department of International Affairs regarding research we are undertaking, affirming our support of the LRP, formal harvest control rules and the adoption of a policy for application of the precautionary approach to management.

In the "Recommendation by ICCAT for the Conservation of North Atlantic Swordfish" (11-02) entered into force June 7, 2012, Recommendation 4 states:

"In advance of the next assessment of North Atlantic swordfish, the SCRS shall develop a Limit Reference Point (LPR) for this stock. Future decisions on the management of this stock shall include a measure that would trigger a rebuilding plan, should the biomass decrease to a level approaching the defined LRP as established by the SCRS."

As reported on the NOAA International Affairs website regarding the 2012 Annual Meeting:

*"The positions advanced by the United States at ICCAT called for a precautionary approach and international standards to strengthen fishery monitoring and reporting in all ICCAT fisheries. The newly agreed measures will support the long-term sustainability of ICCAT stocks across international fisheries, to the benefit of U.S. fishermen."*

The formal report of the 2012 meeting has not yet been released.

#### MRAG Evaluation

The client has presented evidence that the US government has taken steps to encourage ICCAT to implement a precautionary approach and international standards to strengthen fishery monitoring and reporting in all ICCAT fisheries.

While the precautionary approach has not been implemented, the condition is on schedule.

# 9

## Condition 3.2 Governance and Policy

### Relevant Performance Indicators:

#### 3.2.2 Decision-making Processes

##### Condition

By the first annual audit the US Government has taken steps to encourage the adoption at ICCAT of a policy for application of the precautionary approach to fishery management decisions within its competency.

##### Client Action

We have continued to support the development and implementation of an explicit Limit Reference Point for the North Atlantic Swordfish Stock consistent with the Precautionary Approach, where future decisions shall include the triggering of a rebuilding plan should the biomass decrease to a level approaching a limited reference point.

We have been in contact with Rebecca Lent and others in the Department of International Affairs regarding research we are undertaking, affirming our support of the LRP, formal harvest control rules and the adoption of a policy for application of the precautionary approach to management.

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##### MRAG evaluation

The client has presented evidence that the US government has taken steps to encourage ICCAT to implement a precautionary approach and international standards to strengthen fishery monitoring and reporting in all ICCAT fisheries.

While the precautionary approach has not been implemented, the condition is on schedule.

# 10

## Condition 3.3 Governance and Policy

### Relevant Performance Indicator:

#### 3.2.3 Compliance and enforcement

##### Condition

To ensure that, as a minimum, this performance indicator achieves the 80 scoring guidepost prior to any fish being eligible to enter the chain of custody to carry the MSC label, the client shall establish an auditable monitoring and enforcement process that ensures, to the satisfaction of the Certifying Body, that only swordfish caught inside the FEC area can enter into the MSC supply chain.

##### Client Action

Since our certification in December 2011, the following procedure has been in place:

##### Vessel Certification Compliance Procedure for MSC Swordfish

1. All longline vessels must give VMS account username and password when registered in our system.
2. Prior to unloading the fish, the trip is verified by an "Affidavit of Compliance for Swordfish to Carry the MSC Label" signed by the captain.
3. The trip dates are entered into LocPoint.com or SkyTracker.com and a map showing the trip coordinates of the vessel is printed.
4. A point is selected and the coordinates are entered into the EEZ database at Marineorigins.com
5. If the position is within the EEZ, the maps are printed as proof of compliance, the fish are entered as "MSC Certified".
6. The signed "Affidavit of Compliance" and the maps are attached to the Trip Ticket as proof of compliance

Captains do have the option to furnish the coordinates prior to landing, but we have found that most of the captains prefer that it is done by Day Boat Seafood LLC.

All receiving staff at both locations are trained in this procedure; all maps are generated at the Lake Park office and attached to the Trip Ticket and affidavit of compliance when received. All documents are retained for 3 years. This procedure was reviewed and approved during our Chain of Custody Certification.

##### MRAG Evaluation

Closed out in December 2011 at the time of certification.

## Appendix 3. Peer Review Reports

### Peer Review 1 of North Atlantic Swordfish Fishery

#### Overall Opinion

<b><i>Has the assessment team arrived at an appropriate conclusion based on the evidence presented in the assessment report?</i></b>	<b>Yes</b>	<b>Conformity Assessment Body Response</b>
<b><u>Justification:</u></b> <b><u>I agree in principle with the summary scoring for PI 1, 2, and 3</u></b>		NA

<b><i>Do you think the condition(s) raised are appropriately written to achieve the SG80 outcome within the specified timeframe?</i></b>	<b>Yes</b>	<b>Conformity Assessment Body Response</b>
<b><u>Justification:</u></b> <b><u>Yes, but I found some conditions to be generic, and somewhat vague. i.e. ICCAT's adoption of the Precautionary Principle. Why not say "adopt MSY as a limit instead of a target"?</u></b>		The MSC Fishery Certification Requirements specify in 27.11.1.2 that "The CAB should draft conditions to follow the narrative or metric form of the PISGs used in the final tree." The MSC has provided guidance that the certification body should not provide prescriptive conditions.

If included:

<b><i>Do you think the client action plan is sufficient to close the conditions raised?</i></b>	<b>Yes</b>	<b>Conformity Assessment Body Response</b>
<b><u>Justification:</u></b> <b><i>The client, working with NMFS may be somewhat limited in bringing ICCAT up to compliance with some of the Conditions raised. However recent interactions between ICCAT and NMFS suggest ICCAT is adopting a larger commitment to responsible science-based management.</i></b>		NA

#### General Comments on the Assessment Report (optional)

### **Performance Indicator Review**

*Please complete the table below for each Performance Indicator which are listed in the Conformity Assessment Body's Public Certification Draft Report.*

<b>Performance Indicator</b>	<b>Has all the relevant information available been used to score this Indicator? (Yes/No)</b>	<b>Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)</b>	<b>Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)</b>	<b>Justification</b> Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	<b>Conformity Assessment Body Response</b>
1.1.1	Yes	Yes	NA	Scored 80. Under two surplus production model scenarios there is a low probability (less than 5%) that the 2009 stock biomass was at or below the default $\frac{1}{2}B_{MSY}$ limit reference point. It is therefore <u>highly likely</u> that the stock is above the point where recruitment would be impaired	NA
1.1.2	Yes	Yes	Yes	Scored 75, because of a lack of an explicit limit reference point.	NA
1.1.3				NA	NA
1.2.1	Yes	Yes	NA	Scored 85. The stock is managed with a TAC determined by periodic stock assessments. Monitoring is in place and evidence exists that the strategy is achieving its objectives (sustainable harvest).	NA
1.2.2	Yes	Yes	Yes	Scored 75. At the national level in the US, there are well defined harvest control rules in place for the assessed fishery that take into account a wide range of uncertainty. However, the definition and implementation of rules at the international level is limited.	NA

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
1.2.3	Yes	Yes	NA	Scored 80. A comprehensive range of relevant information is collected to support the harvest strategy. Required information is monitored frequently and the main uncertainties are well understood. Detailed information on stock structure, stock productivity, fleet composition, stock abundance, fisheries removals, and other relevant information are available	NA
1.2.4	Yes	Yes	NA	Scored 90. The assessment takes into account uncertainty and is evaluating stock status relative to reference points in a probabilistic way, and has been tested and shown to be robust. However limited data are available on sex-age-size in the catch. Additionally, there is no formal harvest control rule.	NA
2.1.1	Yes	No for Albacore, Bluefin Tuna, and Mako. Scored too high. Yes for Bigeye, Yellowfin, and Dolphinfin. Scores appropriate	Condition needed For Mako	Albacore, Scored 90 (too high): This stock has been overfished since the 1960s, and ICCAT and NMFS began to reduce fishing effort in the 1990s. The current assessment indicates TAC in the future should be less than 28,000t to promote stock rebuilding, but the TAC for 2012 and 2013 remains at 28,000t.  Mako, Scored 80 (too high): the North Atlantic Shortfin Mako Sharks are not overfished but are	We agree that the albacore stock is overfished and that international management needs to further intervene to improve stock status. However, under the CR, retained species are evaluated specifically for the fishery under assessment, evaluating the marginal effect of the fishery to assure that the fishery does not hinder recovery. CR Table CB24, CR Guidance Table GCB6 and CR Guidance



Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
				<p>approaching an overfished condition and are experiencing overfishing. However, ICCAT has not recommend a TAC or mortality reduction to prevent overfishing, and no quota or other limits to prevent overfishing were triggered under the US FMP.NMFS final actions implemented in the 2010 Amendment 3 to the Consolidated HMS FMP in response to the status of this species, was “to take action at the international level through international fishery management organizations to establish management measures to end overfishing, and to promote the live release of Shortfin Mako Sharks in the domestic commercial and recreational shark fisheries”.</p> <p>These are not substantive actions. MSC needs to raise a condition to reduce Mako mortality, at least in the domestic fishery.</p>	<p>Section GCB3.2.4 provide guidance on the interpretation. The evaluation relates to the impact of the fishery rather than change in the absolute status of the resource (in this case albacore). It does not require evidence that the status of the species is actually improving. Given this, we believe that the NMFS actions meet the requirement for “partial strategy of demonstrably effective management measures such that the fishery does not hinder recovery and rebuilding.” This meets the 80 level.</p> <p>Further, the stock has reference points, so meets the second scoring issue of SG 100. We believe that these sections of the CR provide incentives for responsible fisheries to implement best practices for stocks not otherwise well managed or in good stock status. Therefore, the score stands.</p>
2.1,1 (Cont.)				<p>Bluefin Tuna, Scored 80 (Too high). This species has been severely overfished for decades, and was recently listed as Endangered by IUCN. Regardless of the inappropriate nature of the IUCN criteria for fished species, the listing underlines the extreme declines that this stock has experienced. In addition ICCAT mismanagement of Bluefin Tuna is infamous.</p>	<p>Similarly for mako, we agree that the stock is overfished and that international management needs to further intervene to improve stock status. US total catches of shortfin mako represent a small percentage of total Atlantic reported catches, therefore measures implemented within the domestic fleet will have limited impact upon the rebuilding potential of the North Atlantic</p>

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
				Recent management actions have been more responsible and may lead to stock rebuilding. At this stage it is not clear that I would "expect" the stock to rebuild. A few more years of data will resolve this issue.	<p>stock. We have provided justification that under NMFS management, a partial strategy exists such that the fishery does not hinder recovery and rebuilding. Therefore, the score stands.</p> <p>Similarly for bluefin tuna, we agree that the stock is overfished. International management has begun appropriate actions to improve stock status, but success remains to be seen. We have provided justification that under NMFS management that supplements the international action, a partial strategy exists such that the fishery does not hinder recovery, sufficient to reach 80. Therefore, the score stands.</p>
2.1.2	Yes	Yes		The HMS FMP contains a clear strategy to avoid irreversible harm to retained species. The effectiveness for the strategy varies by species, but one overarching trend that I have observed over the last two decades, is the FMP, through its Amendments has steadily improved. More species have undergone stock assessments, and NMFS has been investing more in \$ and personnel devoted to HMS.	NA
2.1.3	Yes	Yes		I agree that the information on all of these retained species would be scored at 80.	NA

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
2.2.1	Yes	Yes		Scores of 80 for these bycatch species seem reasonable, given they must be released. Hooking mortality could be an issue, but NMFS has the data to evaluate this through observer observations and actual PSAT studies of released fish. It might be expedient to include Porbeagle in this list even though many fewer are taken in this fishery than some of the other shark species. Recent Canadian stock assessment show Porbeagle to be severely overfished and the species is of particular concern to recreational fishers and environmentalists.	NA
2.2.2	Yes	Yes		These scores are high, but I agree with them. The HMS FMP comprises a strategy by which bycatch species are being protected. In addition NMFS has been responsive to act as new data become available.	NA
2.2.3	Yes	Yes	Yes	Scored 75 because of discrepancies between logbook and observer data sets. Increased training of captains, Increased observer coverage through Dr. Kerstetter's group and other elements covered in the Action Plan will help to improve the logbook data accuracy. Implementation of the Archipelago electronic monitoring system will improve logbook compliance incredibly. This system has been	NA

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
				highly successful in monitoring the B.C. Bottom LL Fishery for Spiny Dogfish.	
2.3.1	Yes	Yes	Yes	The recent NMFS decision to retain loggerheads as threatened instead of uplisting to endangered was based on increasing abundance index trends. Leatherbacks in the Atlantic have been increasing for several years. NMFS development of sea turtle bycatch reduction protocols have been very successful and takes for both species in the fishery are well below NMFS ITS. Marine Mammal takes in this fishery are low and the score would have been higher if not for questionable species ID problems for the two pilot whale species.	NA
2.3.2	Yes	Yes	Yes	Justification similar to that in 2.3.1	NA
2.3.3	Yes	Yes	Yes	Both sea turtles and marine mammals scored only 75 on this PI because of under-reporting of interactions in log books. I wonder whether the precision of take estimates are too low to use just the observer data to make these estimates. Also see my comments in 2.2.3	NA
2.4.1	Yes	Yes		The fishery scored high on this PI because	NA

<b>Performance Indicator</b>	<b>Has all the relevant information available been used to score this Indicator? (Yes/No)</b>	<b>Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)</b>	<b>Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)</b>	<b>Justification</b> Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	<b>Conformity Assessment Body Response</b>
				environmental impacts are very low	
2.4.2	Yes	Yes		The fishery scored high on this PI because environmental impacts are very low	NA
2.4.3	Yes	Yes		The fishery scored high on this PI because environmental impacts are very low	NA
2.5.1	Yes	Yes		Scored only 80. This fishery might cause changes in trophic structure by reducing the abundance of apex predators sufficient to trigger trophic cascades. In my opinion this is highly unlikely, due to the diversity of the apex predator field, the dynamic and widespread nature of the fauna, and the relatively selective nature of the fishery, which is focused on a relatively small number of species	NA
2.5.2	Yes	Yes		Scored 80. There is a strategy implicit in the HMS FMP to reduce bycatch thereby maintaining biodiversity and abundance of non-target apex predators.	NA
2.5.3	Yes	Yes	Yes	Scored 75. There is much information on oceanic pelagic ecosystem structure and function, including some trophic modeling, But	NA

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
				no monitoring focused on trophic effects of the longline fishery	
3.1.1	Yes	Yes		Scored 90 because of the well-established management authorities, NMFS and ICCAT	NA
3.1.2	Yes	Yes		Scored 90, and would have scored higher , but not all ICCAT processes have been transparent.	NA
3.1.3	Yes	Yes	Yes	Scored 70 because ICCAT has not explicitly adopted the precautionary approach or defined it through a biological stock limit	NA
3.1.4	Yes	Yes		Scored 90 Neither management authority subsidizes fisheries (although some ICCAT members might).	NA
3.2.1	Yes	Yes		Scored 100. The fishery does have clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2	NA
3.2.2	Yes	Yes		Scored 95. Both ICCAT and the US Government have sophisticated and	NA

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
				comprehensive decision-making processes	
3.2.3	Yes	Yes		Scored 85. Enforcement and compliance in the US fishery are generally high, but the discrepancies between logbook and observer data remain.	NA
3.2.4	Yes	Yes		Scored 90. In general the fishery has a research plan that fills most needs of management	NA
3.2.5	Yes	Yes		Scored 90. There is effective and timely review of the fishery-specific management system. Both externally and internally by NMFS, but primarily internally by ICCAT	NA

### Any Other Comments

Comments	Conformity Assessment Body Response
This is a relatively clean and well-managed fishery with most of its sea turtle bycatch problem under control. NMFS has been devoting much effort in assessing the various shark species and implementing dynamic management. They need to take a close look at Makos and Porbeagles with consideration of placing them (particularly the latter) on the protected list. ICCAT management appears to be making real progress in adopting responsible, science-based management measures. NMFS needs to keep pressing ICCAT to define and adopt the Precautionary Principle (as suggested by FAO more than a decade ago). Adoption of the Archipelago electronic monitoring system will virtually eliminate the discrepancies between logbook and observer data.	NA

# Peer Review 2 of North Atlantic Swordfish Fishery

## Overall Opinion

<b><i>Has the assessment team arrived at an appropriate conclusion based on the evidence presented in the assessment report?</i></b>	<b>Yes</b>	<b>Conformity Assessment Body Response</b>
The assessment is comprehensive and covers the issues coherently. My concern is that to achieve a higher score for P1, it will be necessary for ICCAT to adopt a precautionary approach and implement it. This is simply not likely. Considering the stringent measures within which the US fishery operates, I consider it unlikely that the US will take its allocation and the remainder of the North Atlantic allocation is beyond their control. The key area that could be strengthened is in the observer coverage and better life history data. I do not detect an unwillingness to do this, but there are simply not resources available to accomplish it. The assessment literature is not as comprehensive as it could be. (see comments on 2.5.1). Use of Myers et al, 2007 and Myers and Worm (2003) (and not in the references of the assessment) is disappointing as these reports have been severely criticized for their methods and conclusions by respected fish population dynamics researchers.		We take a more optimistic view regarding the likelihood of ICCAT adopting and implementing a precautionary approach. A key recommendation of the 2008 Independent Review of ICCAT was for ICCAT to formally and systematically adopt the precautionary approach. In 2009 ICCAT convened the Working Group on the Future of ICCAT to consider this and other recommendations from the review. The question of the precautionary approach has been a priority item on the agenda at each of its three meetings to date. Most participants at the third meeting of the Working Group in May 2012 concluded that text to enshrine the concept of the Precautionary Approach should be considered in any future Convention amendment process. The assessment team concluded that it is reasonable to expect that this process will lead to ICCAT adopting and implementing the precautionary approach within the timetable set forth in Condition 3.1.

<b><i>Do you think the condition(s) raised are appropriately written to achieve the SG80 outcome within the specified timeframe?</i></b>	<b>No</b>	<b>Conformity Assessment Body Response</b>
Justification: Increasing this score is dependent upon ICCAT adopting a biomass reference point and that is not likely. However, the Bmsy appears to be working at present and perhaps this question will be addressed in the 2013 SWO stock assessment.		We take a more optimistic view regarding the likelihood of ICCAT developing a biomass limit reference point. Under ICCAT Recommendation 11-02 adopted in 2011 the SCRS is required to develop a Limit Reference Point for the North Atlantic swordfish stock in advance of the next stock assessment, which is currently scheduled for 2013. The assessment team had no evidence that the SCRS would not comply with this requirement, and it was therefore reasonable to assume that the condition would be met within the required time frame.

If included:

<b><i>Do you think the client action plan is sufficient to close the conditions raised?</i></b>	<b>NA</b>	<b>Conformity Assessment Body Response</b>
<u>Justification:</u>		

## General Comments on the Assessment Report (optional)



**Performance Indicator Review**

Please complete the table below for each Performance Indicator which are listed in the Conformity Assessment Body's Public Certification Draft Report.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
1.1.1	Y	Y	NA	Stock is at or above the reference point and conversations with SCRS members and delegation members for 2012 are confident with the data.	NA
1.1.2	Y	Y		The score is appropriate but action by ICCAT is necessary and the US ICCAT Advisory Committee should make this a priority agenda item	NA
1.1.3	Y	Y	NA	This outcome is continuing good news	NA
1.2.1	Y	Y	NA	Scoring is justified.	NA
1.2.2	Y	Y	Y	Criteria for scoring are met	NA
1.2.3	Y	Y	NA	Scoring is appropriate considering higher scoring is dependent upon ICCAT actions.	NA
1.2.4	Y	Y	NA	ICCAT must act to increase the score.	NA

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
2.1.1	Y	Y	NA	Analysis of the target species is adequate to justify this scoring and in some cases it could be higher.	NA
2.1.2	Y	Y	NA	Similar to 2.1.1 Realizing that the US operates with objectives that are more stringent that required by ICCAT, this score could be higher. Bluefin will continue to be problematic until all the fisheries do adequate enforcement of the minimum size reg.	NA
2.1.3	Y	Y	NA	Logbooks and dockside monitoring support the scoring. US regulation is rigorous.	NA
2.2.1	Y	Y	NA	All billfish except SWO must be released so there is little that can be done by US fisheries to benefit those species. Sharks are increasingly covered by US and ICCAT. However, it still comes down to enforcement and that is a matter of adequate resources. Market forces and public concerns are beginning to play an increasing role for management plans of these bycatch species.	NA

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
				My observation is that the skilled longliners and handgear bouy fishermen set to avoid the bycatch species as much as possible . More observor coverage could assist in scoring this indicator.	
2.2.2	Y	Y	NA	See 2.2.1	NA
2.2.3	Y	Y	Y	Problems are raised by the white marlin/roundscale spearfish data and they are addressed in the assessment. This would appear to call all prior data on life history and data records and thus a stock assessment for these species is simply not possible. It appears that only a taxonomist can resolve these species to date. The condition in the assessment is appropriate and justified.	<i>NMFS has provided instructions for identifying roundscale spearfish from white marlin at <a href="http://www.sefsc.noaa.gov/species/fish/spearfishid.pdf">http://www.sefsc.noaa.gov/species/fish/spearfishid.pdf</a>.</i>
2.3.1	Y	Y	NA	The issue of marine mammals is not likely to be resolved so the condition is justified. The practices of the US fishery in reduction of fatal interactions with marine turtles is dramatic. The sea turtle score could justifiably lbe higher.	NA
2.3.2	Y	Y	NA	See 2.3.1	NA

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
2.3.3	Y	Y	NA	The conditions are very dependent upon an enhancement of the POP program which is very unlikely. However, the requirement for circle hooks, exclusion zones, seasonal closures etc for the longline fishery justifies the scoring. Sea Turtle scoring could be higher.	The condition (2.4) requires improved reporting by the commercial fleet to address the discrepancy between logbook and observer data for ETP species, which suggests incomplete reporting of interactions with these species by fishermen. This may be achieved in a number of ways aside from enhancement of the POP. Enhanced observer coverage may be achieved through unilateral action by the Client fishery.
2.4.1	Y	Y	NA	Obvious, score is completely justified	NA
2.4.2	Y	Y	NA	See 2.4.1	NA
2.4.3	Y	Y	NA	See 2.4.1 and 2.4.2	NA
2.5.1	N	N	NA	There is an increasing body of literature on the topic of ecosystem fisheries management. The report does not adequately cover them. One of the points one can see in the reports is that it is easier	We have added additional references from the refereed literature to the background discussion leading to our conclusions with respect to this Performance Indicator (Section 3.4.5), however, this has not

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
				to write the words and extremely difficult to implement. If one is to use the report of the Okey and Pugliese (2001) cited in the assessment, the estimated cost to collect the data on one pelagic species at a level of statistical reliability to stand up, it would cost more than \$1M. Thus, it is not feasible to use the indicator for a critical decision and it is probably too heavily weighted. One of the problems is that answering the question of what is a critical species depends upon the eye of the beholder. A very useful paper on this issue addressing HMS is Lynch et al, Challenges in the Assessment and Management of Highly Migratory Bycatch Species: A Case Study of the Atlantic Marlins. In Sustainable Fisheries: Multi-Level Approaches to a Global Problem, 197-225. The paper has an excellent discussion that is very relevant to this assessment in different areas of the assessment. The references are comprehensive and are dominated by references from the refereed literature rather than inside agency reports.	changed the assessment team's view with respect to the allocated score, which we consider to be justified.
2.5.2	Y	Y	NA	This indicator needs to be reviewed for utility for HMS pelagic species. I do not object to the score as I think the indicator and	If there is a question of the relevance of the Performance Indicator we think this is more an issue for the MSC than the assessment

<b>Performance Indicator</b>	<b>Has all the relevant information available been used to score this Indicator? (Yes/No)</b>	<b>Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)</b>	<b>Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)</b>	<b>Justification</b> Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	<b>Conformity Assessment Body Response</b>
				measures are not relevant for this fishery.	team.
2.5.3	Y	N	N	Comments in 2.5.1 etc	See 2.5.1
3.1.1	Y	Y	NA	Score is justified even though many of the indicator criteria are speculative.	NA
3.1.2	Y	Y	NA	I support the overall score of 90 as the process is in place and the US is the most aggressive of the states in ICCAT addressing these issues. It is not in this document but it was because the US took the lead on the swordfish fishery crisis at ICCAT and our fishermen took the big hit, that this fishery has recovered. I have had conversations with members of the 2012 delegation and SCRS members. They are very confident that the fishery is still in a growth mode and next years assessment will support the prior practices.	NA
3.1.3	Y	Y	NA	The rationale for the score is appropriate with the condition statement.	NA

<b>Performance Indicator</b>	<b>Has all the relevant information available been used to score this Indicator? (Yes/No)</b>	<b>Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)</b>	<b>Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)</b>	<b>Justification</b> Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	<b>Conformity Assessment Body Response</b>
3.1.4	Y	Y	NA	Reference is not in citations page 142	Reference has been added to the reference list.
3.2.1	Y	Y	NA	US management regs exceed the ICCAT protocols and ICCAT still needs adoption of the Precautionary Approach to justify the score.	In the view of the assessment team the ICCAT management objectives for the North Atlantic swordfish fishery are demonstrably consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, hence the score is justified.
3.2.2	Y	Y	NA	See 3.2.1	See 3.2.1
3.2.3	Y	Y	NA	If one considers only the US fishery as it operates under the HMS Plan and implementation, the score is justified. As long as the US fishery is more rigorous than ICCAT, the score is justified.	NA
3.2.4	Y	Y	NA	Research plans would have be more rigorous and have more credibility if they were externally reviewed and conducted by units outside the agencies. If that were done, the score would be completely justified.	While we might agree with the comment, the requirement for external review is not explicit within the text of the Performance Indicator, hence it is not a factor in assessing the score.
3.2.5	Y	Y	NA	External review of the system would justify	The ICCAT management system is not

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
				the score .	subject to regular external review; this is why the score of 90, rather than 100 was given.

### **Any Other Comments**

Comments	Conformity Assessment Body Response
<p>I have reviewed my comments on Principle One and am comfortable with the scoring, reference points and conditions necessary. The US fishery is well managed and the outcome of the management plan is a recovered fishery.</p> <p>Principle Two is also scored appropriately. The only concern I have is whether it will be possible to document the 20 mile limit on pelagic longline length and will be interested in the VMS data can document the compliance. It is modestly troubling that much of the outcome for this section is dependent upon the rigor of ICCAT, which can be questionable. I am confident that the US fishery will hold up its end.</p> <p>The scoring on Principle Three is also scored appropriately overall.</p> <p>As in Principle Two, ICCAT protocols and implementation are the problem for the swordfish population in the international waters of the Atlantic and the other significant national fisheries. Perhaps the research on migratory patterns will yield insights into the dynamics of the stocks. As far as I know, only the Canadians are doing migratory studies with PSATs on swordfish, but it is difficult to review the research proposals and outcomes of the studies at present.</p>	No further comment necessary.





## Appendix 4. Stakeholder submissions

### NAtl SWO Assessment Stakeholder meeting – July 19, 2012

NMFS morning meeting: In attendance- Wesley Toller and Colin Brannen (ASI), Graeme Parkes and Jill Swasey (MRAG Americas), Guillermo Diaz (HMS scientist from SEFSC at HQ), Rachel O'Malley (International Affairs), Karyl Brewster-Geisz (Branch Chief HMS, implement domestic regulations for swordfish in the Atl), Kristy Long (OPR – mm and bycatch issues), Rebecca Mitchell (MRAG Ltd, on skype), Bob Trumble (MRAG Americas, on Skype)

MRAG will need to harmonize between the FEC swordfish assessment and for the N Atlantic.

- General conclusions that a lot of information on P1/3 between former FEC swordfish and this assessment remains the same, and will consider updates that have occurred over the last 6-8 month. Main focus here will be P2, with large expansion of area in this assessment there are new issues for P2

#### **P2 Consultation discussion**

##### **Retained catch**

- MSC defines main species as >5% proportion of catch by weight
- Data on white and blue marlin in numbers caught, not weight.
- US data estimates marlin bycatch in total weight by area (ICCAT website), Billfish Area 92 includes FEC
- Regulations will differ by area, management is generally gear/species based
- Recommend DLR (not FLS) data, will be more accurate account of landed catch
- FLS and observer data is only source for discards
- ICCAT has posted reports from recent scientific meetings, including stock assessments for white marlin and shortfin mako shark, and the Subcommittee on Ecosystems:  
<http://www.iccat.int/en/meetingscurrent.htm>

##### **Bycatch (Fish, Sharks)**

- For all bycatch – Assessments (ICCAT) are conducted for entire mortality of a spp, not for a portion taken by US fleet or a particular segment – almost impossible to contribute take and jeopardy to a segment
- Karyl provided map of closed areas, can get shp files
- MRAG assessment will look at catch by area and impacts on non target species.
  - Species to include: blue shark, tiger sharks new rule prohibiting silky shark retention. Different species present up east coast
- For status of bycatch species, everything will be available through ICCAT, should look at different areas separately
- There are spp (e.g. bluefin tuna) where management allows a small amount of retention, but is also bycatch due to limited allowable retention under management (discarded >100mt)
- New ICCAT assessments for white marlin and shortfin mako are available
- Bluefin tuna ICCAT stock assessment scheduled for 1<sup>st</sup> week of September 2012; and white marlin and shortfin mako done recently
- Key thing to find out – if there is any evidence that the fishery for swordfish is generating jeopardy for any spp.
- For ETP – we're looking at ESA jeopardy, where spp are not on ESA list – are spp in quest at least above a limit ref point?

- If US management of a spp is designed to keep spp within a biological limit for the whole US, could argue that swordfish fishery take is less than that whole
- NMFS would like to know more about metrics used and how they are comparable across spp, fisheries. For mammals it's PBR, conservative. Jeopardy standard could be different, sustainable vs jeopardy are very different for some spp, esp turtles
  - PBR is explicitly for marine mammals, not applied to sea turtles b/c we don't know many life history characteristics with confidence

#### **Bycatch (Sea Turtles, sea birds)**

- Loggerhead status under ESA is still threatened for NE distinct population segment (DPS)
- No new Biological Opinion (ESA Section 7), NOAA has not reinitiated an ESA evaluation
- Different sea turtle measures in place in NE distant.
- There are different regulations with respect to turtles in diff areas, but within EC EEZ will all be the same; in NED same regs with respect to turtles, different hook and bait rules in EEZ
- There are specific requirements for gear removal.
- Gear type interactions in NMFS technical reports, includes observer comments and would be most comprehensive source. Tech memo notes when dehooked and disposition of animal.
- Compliance guides at [http://www.nmfs.noaa.gov/sfa/hms/Compliance\\_Guide/index.htm](http://www.nmfs.noaa.gov/sfa/hms/Compliance_Guide/index.htm)
- Annual OPR Observer bycatch reports from Lance Garrison. 2011 report is now available. Will provide detail of gear involved in interaction (eg. Hook size):  
[http://www.sefsc.noaa.gov/turtles/TM\\_NMFS\\_SEFSC\\_632\\_Garrison\\_Stokes.pdf](http://www.sefsc.noaa.gov/turtles/TM_NMFS_SEFSC_632_Garrison_Stokes.pdf)
- ICCAT subcommittee on ecosystems has begun an impact assessment on sea turtles – multiyear process no outcomes yet, for all Atlantic ICCAT fisheries. Will this assessment look at different regions? There are considerable differences.
  - NOAA can get catch rate info from the diff fisheries, but do not use fishermen anecdotal information. But CPUE info will be used in assessment model
- Sea bird bycatch not a big problem. NMFS report to ICCAT, demonstrates little/no interactions
- There is an area off NC where a higher number of interactions occurs, still low in total number of interactions, there are no measures to mitigate, not considered a problem
- Rebecca interested in getting more detail regarding turtle measures in place and if they seem to be working – (Karyl and Kristy will get back to Rebecca on that)

#### **Marine Mammal Interactions in the Atlantic**

- See MMPA Potential Biological Removals. Pelagic, longline take reduction plan under MMPA, some specifics for MA Bight statistical area (KL will send report)
- Significant contrasts in MM interactions in areas. Northeast coastal and MAB are significant areas of interactions
  - 3 predominant species of interactions include Short fin pilot whales, long fin pilot whales, Risso's dolphins (contact Lance Garrison)
    - Can't discern between short fin and long fin, data often groups as 'pilot whales' (abundance estimates combined, BUT mortality estimates are by spp) – complicates status determinations.
- Kristy and Karyl will let MM stakeholders know about the assessment – pelagic longline Take reduction team is a stakeholder team

#### **Habitat**

- Buoy gear is primarily in FEC. Not much interaction with substratum in FEC

- There is not a lot of lost longline gear, NMFS does not estimate impact of ghost fishing
- NMFS EFH maps, coordinates and GIS files are all on the web –
  - EFH: <http://www.nmfs.noaa.gov/sfa/hms/EFH/index.htm>

#### **Ecosystem structure and function**

- For FEC assessment no data available to use as assessment of risk to ecosystem.
- FEC certification has a condition on 'ecosystem' to have some kind of assessment done.
- Nothing that NMFS has that we are missing. No additional modeling that we know of, or plans to move into that area in the future – need to continue to look into this

#### **Certification Unit**

- New certification will consume FEC certification, though FEC swordfish cert will have 1<sup>st</sup> surveillance audit
- Will likely need to include NED because a vessel fishing in the NED could land on east coast and there is no way to determine where the fish was caught.
- The FEC certification has a condition on the fishery to use VMS data for vessels within cert unit, to prove that they only fish within FEC. It is auditable, by the CAB, reviewed but not necessarily made public.
- It is unclear what agreement Dayboat will make vessels and/or processors for sharing the certification, this is tbd

#### **Observer data**

- Observer coverage in quarters based on effort from previous year, so may/not achieve target depending on vessel behavior. Vessels are required to do a certain number of sets...some are doing required number and short sets, returning observer and going back to fish. This should be called out in the data

#### **P3 Management System (changes since September 2011); and some P1**

- **ICCAT recommendation 11-02** – sets NA SWO TAC and country quotas for 2012-2013, changed % of allowable carryover now reduced to 25% from 50% (for major harvesters, exception for small, countries under 500 t quota), and provides alternative way to measure min size for swordfish – can measure by length and weight, and can now also use CK measurement for fewer dead discards, to allow for landing of long thinner fish.
- **US has not yet implemented these new ICCAT measures.** Requirements in 11-02 not yet domestically implemented, expected in Sept 2012
  - All ICCAT recommendations, including prohibition on landing silky shark, will go into effect around Sept 2012
  - ICCAT requirement that SCRS will develop a limit reference point
  - **Next swordfish assessment is in 2013**, may result in implementation of limit ref points in 2014
- NMFS is working on 2 FMP amendments that could affect pelagic longliners, amendments are out as Pre-Drafts (online)
  - Amendment 5- Regarding sharks (in general) and specifically dusky, scalloped hammerhead sharks –proposed rule due later this fall. Need to have a rebuilding plan for scalloped hammerheads by April 2013

- Amendment 7 – Regarding Bluefin tuna fishery as a whole. Near end of pre-draft comment period
- Also working on Amd 8 to look at swordfish fishery as a whole, more impact to Caribbean region. There is potential for a diff permit to allow more hand gear fishermen into fishery
- Impact assessments on regulations are done when proposed rule comes out; Advisory Panel scheduled for September
- Need to make sure fishery follows international treaties and domestic regulation. Need to ensure that fishery complies with ESA, MMPA, etc – need evidence to ensure that fishery is sustainable
  - ITS and mortality levels required in BiOp in Lance’s report
- Biologically based limits
  - There must be a partial strategy such that the fishery assessed does not hinder recovery
  - E.g. Where dusky’s have been prohibited in all fisheries, Amd 5 will put in measures to stop overfishing
  - Blue marlin remains overfished/overfished and continues to decline – review carefully –There is zero retention in US, but there are discards. Looking at new measures through ICCAT b/c other countries don’t have zero retention

Review of Assessment timeline; OK to follow up with NMFS to help us understand some of the impacts

End

#### **Meeting with Marydele Donnelley from the Sea Turtle Conservancy – 3pm 7/19/2012**

- Concerns over area of certification, now assessment is looking at a much larger fishery, client will have less control, and there are more problems with sea turtle bycatch
- Logistically this will be much more difficult situation for NGOs
- Some issues looking at cumulative effects and stocks in a larger context – which may be more addressed in this scope of assessment
  - In a lot of ways this is an opportunity to strengthen but could also result in cutting protection if not done well
- Concerned that certification of the CAN LL SWO lowered the bar which would permit certification of almost any fishery
- In NED required to use 18 knots hooks, Scott has agreed to this, but this isn’t required everywhere
  - Some areas require 16 knot – but this is not sufficient, really urges use of 18 knot, does reduce capture
  - Regulation in NED is 18 knot hooks and finfish bait only
- In 2011 Garrison and Stokes report, most of captures where with squid bait – this really seems to be a problem; easily 80% of the 47 captures
- Consider changes in migration to moving North with changing ocean temperatures
- Concerned over differences between logbook data and observer data – is there a higher standard to be achieved?

- Environmental community doesn't trust log book data, esp when it comes to undersized and protected spp there is an incentive to underreport
  - Was addressed in FEC certification with enhanced observer coverage
- It's important to recognize that potentially less car is taken with animals in the absence of an observer
- Info on interaction recorded and factored into post release mortality – provides data on where/how gear left attached to animals
- The P2 part of the report is where we will really see the big difference and the way to look at cumulative effects and broader impact

End

## Stakeholder comments on Request for Variance.

**From:** Teri Shore, SeaTurtles.org [<mailto:tshore@tirn.net>]  
**Sent:** Thursday, October 11, 2012 12:29 PM  
**To:** 'Jodie Campbell'  
**Cc:** [bob.trumble@mrغامericas.com](mailto:bob.trumble@mrغامericas.com); [graeme.parkes@mrغامericas.com](mailto:graeme.parkes@mrغامericas.com)  
**Subject:** RE: MRAG Notification: Request for Variance - US North Atlantic Swordfish Fishery Surveillance Report (MragRef:US1305\_MF)

Hi all,

All these changes to the fishery, none of which were ever mentioned during the original certification process, continues to concern me greatly. The expansions and exceptions being granted this fishery from almost day one of certification provides additional evidence that the process is heavily weighted toward fishery expansion and profits, not sustainability.

Unfortunately, the stakeholder process was so onerous and unsatisfactory that my organization is unable to continue to weigh in but will continue to watch and warn seafood lovers to stay away from long-lined swordfish; and to question certification by MSC.

Ultimately the fishery, the sea turtles and the oceans will suffer.

Teri Shore

## MRAG Response

**From:** Graeme Parkes [<mailto:graeme.parkes@mrغامericas.com>]  
**Sent:** Monday, October 22, 2012 5:06 PM  
**To:** 'Teri Shore, SeaTurtles.org'  
**Cc:** Bob Trumble; Jodie Campbell; 'Rebecca Mitchell'  
**Subject:** RE: MRAG Notification: Request for Variance - US North Atlantic Swordfish Fishery Surveillance Report (MragRef:US1305\_MF)

Dear Teri

Thank you for your email and for sharing your concerns with us. I wanted to try to reassure you regarding the new swordfish assessment and its relationship to the existing certification of the FEC

fishery. The existing certification is not being expanded and no exceptions have been granted. In fact nothing regarding the existing certification has changed since the fishery was certified. We are approaching the first anniversary of that certification and accordingly there needs to be an annual surveillance audit to assess progress against the Conditions and Client Action Plan that were part of the Certification Report.

What is new is that an assessment has been initiated on a unit of certification that covers the swordfish fishery on the entire US east coast (omitting the Caribbean and Gulf of Mexico). While much of the information that went into the FEC assessment will be relevant to this new assessment (mainly in terms of Principles 1 and 3), this will be a completely separate assessment that is required to meet all of the MSC certification requirements, as would any other fishery.

Because this new unit of certification includes the FEC area that was assessed last year, what we are asking for in this variance is simply to have the Public Comment Draft Report (PCDR) of the new assessment serve two purposes – both its intended purpose (as the PCDR), and as the annual surveillance report for the SE US North Atlantic Swordfish fishery. This simply enables us to avoid wasting time preparing two reports that would include the same information. The timing is such that The PCDR will be available before the due date of the annual surveillance report, hence there is no extension of time being granted to the FEC fishery.

I hope you will agree that what we are proposing is both logical and avoids unnecessary waste of resources. We will ensure that there is no loss of rigor in the procedure by which the existing certification is audited.

Best regards  
Graeme Parkes

Stakeholder Comments on PCDR





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Tel: +44 (0)20 7246 8900  
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**SUBJECT: MSC Review and Report on Compliance with the scheme requirements**

Dear Graeme Parkes

Please find below the results of our partial review of compliance with scheme requirements.

CAB	MRAG Americas, Inc.
Lead Auditor	Graeme Parkes
Fishery Name	{7C46FB94-FE08-4987-AB2B-9CAC635DF2BC}
Document Reviewed	Public Comment Draft Report Posted

Ref	Type	Page	Requirement	Reference	Details	PI
3570	Major	p. 163	CR-CB3.5.3	SG100 does not include the qualifier 'main' and the team shall consider all retained species in the assessment. If there are no P2 retained species in the fishery, or retention is exceptionally rare and negligible in its impact, then the fishery would meet SG100.	For these PIs the team did not consider all retained and bycatch species, but still gave some scores higher than 80.	2.1.1, 2.1.2, 2.2.2
3576	Major	p. 128	CR-27.12.1.3	The CAB shall determine if the systems of tracking and tracing in the fishery are sufficient to make sure all fish and fish products identified and sold as certified by the fishery originate from the certified fishery. The CAB shall consider the following points and their associated risk for the integrity of certified products. The opportunity of substitution of certified with non-certified fish prior or at landing.	The report says that upon landing of swordfish, and upon receipt of the fish, Day Boat Seafood staff members label each fish with a two-part barcode tag that shows the species, weight, vessel, and lot number. However the report does not describe how segregation from other species (by-catch) is ensured and if some labelling happens prior to the landing, while fish is still on board of fishing vessel.	

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Page 1 of 3

www.msc.org				Marine Stewardship Council		
3585	Major		CR-27.10.6.2	The rationale shall make direct reference to every scoring issue and whether or not it is fully met.	The rationale does not support the score for P1 management Pis. The report does not consider the management in Principle 1 of all of the fisheries on the shared stock, beyond the US component. See GCR-GCB2.1.3 for further details.	
3568	Guidance	p. 14	N/A		2nd paragraph: Change dolphin to dolphinfish.	
3569	Guidance	p. 20	N/A		Last paragraph: Change agging to tagging?	
3571	Guidance	p. 31, 69, 165	N/A		Please ensure here and elsewhere that references to the FEC only (vs. full UoC) are intentional.	
3572	Guidance	p. 131, 151	N/A		For the statement "landings are 100% dockside monitored", please clarify whether this is all of ICCAT, the US, and/or Canada.	1.2.3
3573	Guidance	p. 132	N/A		Please correct referencing error at the bottom of page.	
3578	Guidance	p. 129	CR-27.12.1.6	The CAB shall determine if the systems of tracking and tracing in the fishery are sufficient to make sure all fish and fish products identified and sold as certified by the fishery originate from the certified fishery. The CAB shall consider the following points and their associated risk for the integrity of certified products: The number and/or location of points of landing.	No clarification is given on the type, number and geographical location of the Day Boat Seafood' facilities where landings are permitted to take place.	
3583	Guidance		GCR-GCB2.1.3	When considering management Pis under P1 in fisheries that target shared stocks, straddling stocks or highly migratory stocks, CABs should consider all national and international management systems that apply to the stock and the capacity of these systems to deliver sustainable outcomes for P1.	The report does not consider the management in Principle 1 of all of the fisheries on the shared stock, beyond the US component.	
3584	Guidance		N/A		Please check sums for percentage of overall catch column in Table 8, as they may not add up to 100%.	

This report is provided for action by the CAB and ASI in order to improve consistency with the MSC scheme requirements; MSC does not review all work products submitted by Conformity Assessment Bodies and this review should not be considered a checking service. If any clarification is required, please contact Maylynn Nunn on +61 2 9524 8400 for more information.



Best regards,  
Dan Hoggarth  
Fisheries Oversight Director  
Marine Stewardship Council

cc: Accreditation Services International

## MRAG Americas Response to MSC Comments

### Ref 3570. Main species

The scoring for PIs 2.1.1 and 2.1.2 was revised to a score of 80, reflecting the emphasis on only main species. The rationale for scoring 2.2.2 specifically addresses minor species, and was further revised to show that the bycatch strategy covers all species, so the score remained unchanged.

### Ref 3576. Traceability

The Traceability section was revised to demonstrate that all individuals from each species are uniquely labeled upon landing, that no labeling occurs at sea, and that no other species are confused with swordfish so that identification is certain. Trips that have fishing only within the unit of certification, as determined by VMS records, may enter the MSC supply chain; trips with fishing beyond the unit of certification are not eligible.

### Ref 3585. International management

GCB2.1 specifies that CABs should consider all national and international management systems that apply to the stock and the capacity of these systems to deliver sustainable outcomes for P1. The report has extensive discussion of ICCAT, the RFMO with responsibility for the North Atlantic swordfish stock. All members and cooperating non-members are required by ICCAT to comply with the ICCAT harvest strategy. The descriptions of performance indicators in 1.2 describe the ICCAT requirements and actions, and supplement this with information for the management of the US swordfish fleet. Performance Indicator 1.2.3 80 (b) and (c) now have additional rationale added to assure that the ICCAT requirements are explicitly recognized in the scoring. Therefore, the rationale makes direct reference to every scoring issue and whether it is fully met for all performance indicators for 1.2.

### Ref 3568. Change dolphin to dolphinfish: Done

### Ref 3569. Change agging to tagging: Done

### Ref 3571. References to FEC: Reviewed and updated

### Ref 3572. Clarification of dockside monitoring

The reference to 100% dockside monitoring was removed

### Ref 3573. Referencing error: Done

### Ref 3578. Day Boat facility locations: Updated

### Ref 3583. International management

See responses to Ref 3585

### Ref 3584. Check sums in Table 8

There are a large number of very small percentages in this table. Rounding resulted in the total percentage adding up to more than 100. However, the difference for any one individual row in the table is very slight and does not affect the outcome of the assessment.



WWF Smart Fishing Initiative  
International WWF Centre for Marine Conservation  
Mönckebergstraße 27  
20095 Hamburg  
Germany

WWF-US  
Fisheries Program  
1250 24<sup>th</sup> St NW  
Washington, DC 20037  
USA

February 14, 2013

Dear Graeme,

WWF is committed to improving the sustainability of fisheries globally, and has a particular interest in ensuring that MSC assessments adequately address known shortcomings of various Regional Fisheries Management Organizations (RFMOs). We commend Day Boat Seafood for striving to achieve MSC certification for the U.S. North Atlantic Swordfish fishery and hope that it can accomplish this goal.

However, WWF would like to register its concerns with regard to the scoring of PI 2.1.1 and to the conditions of certification placed on the U.S. North Atlantic swordfish fishery and the milestones designated to track progress made toward improving the fisheries' scores against the MSC standard during the certificate period, as stated in the Public Comment Draft Report (PCDR). Conditions and milestones are essential to guiding the development of the client action plan, which informs when and how fishery improvements are made during the certificate period. Milestones must be outcomes and must be measurable.

WWF notes Day Boat Seafood's continued participation in management and advisory forums and advocacy for the development of reference points and harvest control rules. However, WWF firmly believes that stronger conditions, milestones and a client action plan, with explicit, measurable milestones, are necessary for certification of the fishery (as outlined in the MSC Certification Requirements (CR) section 27.11). Our comments below largely focus on P1 conditions, but conditions and milestones for all conditions should be reviewed and revised to ensure compliance with CR 27.11.

#### **Scoring**

**PI 2.1.1: The fishery does not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species.**

**We have concerns with regard to several retained species meeting PI 2.1.1 scoring issue c at SG80: "If main retained species are outside [biologically based] limits there is a partial strategy of demonstrably effective management measures in place such that the fishery does not hinder recovery and rebuilding."**

According to MSC guidance, a "partial strategy" represents a cohesive arrangement which may comprise one or more measures, an understanding of how it/they work to achieve an outcome and an awareness of the need to change the measures should they cease to be effective. A partial strategy may not have been designed to manage the impact on the component of interest specifically.



Although it understood that the North Atlantic swordfish fishery only represents a small portion of the U.S. fisheries impacting these stocks, in order to determine that that even the smallest impact does not hinder recovery there must be some certainty that recovery is occurring for the broader stocks. The extent of recovery is not clear from the scoring justifications; therefore, it is difficult to determine whether several retained species should meet scoring issue c at SG80.

Specifically:

**Albacore tuna:** The total allowable catch (TAC) for Northern Atlantic albacore is too high. Current catches hinder recovery, as reported catches are greater than the TAC. The PCDR states that Northern albacore tuna is below its target reference point but not likely within biologically based limits (page 158), which does not point toward evidence that the strategy is demonstrably effective, corresponding instead with SG60 for scoring issue c.

**Atlantic bluefin tuna:** The ICCAT Standing Committee on Research and Statistics (SCRS) considers two hypotheses in calculating the status of the stock: "high potential recruitment" and "low potential recruitment." Given the lack of clear indication of a regime shift, it is more precautionary to assume that the high recruitment hypothesis applies. Stock biomass is extremely low under the high potential recruitment hypothesis ( $B/B_{msy} = 0.19$ ). To obtain a score of 80 for scoring issue c, there must be a partial strategy of demonstrably effective measures in place such that the fishery does not hinder recovery or rebuilding. Given dramatically low biomass estimates, the current recovery plan for Western bluefin is certainly not demonstrably effective.

The current assessment places heavy reliance on flawed advice: No review is given to the adequacy of the recruitment scenarios put forward by ICCAT. A thorough examination of the state of the stock must be provided, and a clear and precautionary assessment as to whether the stock is outside biologically based limits must be made. We believe that a precautionary approach would assume that a  $B_{current}/B_{msy}$  of 0.19 means that this species, according to MSC guidance, is below a limit reference point. It is not clear how the swordfish fishery could meet scoring issue c at SG80 for 2.1.1.

**Shortfin mako:** Although not a U.S. designation, the COSEWIC designation in Canada highlights data uncertainty, and recent stock assessments suggest that the North Atlantic population is vulnerable and catches are declining. The PCDR acknowledges that North Atlantic shortfin mako may be outside biologically based limits. Shortfin mako bycatch is limited by limiting overall fishing effort (via limited entry and swordfish quotas) and by the limited overlap between the fishery and shortfin mako distribution. The MSC (GCB 3.3.1a) defines 'measures' as individual actions or tools that may be in place either explicitly to manage impacts on the component or coincidentally, being designed primarily to manage impacts on another component, [that] indirectly contribute to management of the component under assessment. The measures limiting shortfin mako bycatch are clearly in place coincidentally and not part of a demonstrably effective partial strategy to reduce shortfin mako bycatch. As such, the measures in place are at best expected to ensure that the fishery does not hinder recovery (SG60).

As such, we do not believe that the scores for albacore tuna (90), Atlantic bluefin tuna (80), or shortfin mako (80), or the overall PI score of 85, are supported by the evidence presented. If lower scores result in an overall PI score of less than 80, an outcome-oriented and time-bound condition of certification must be prepared.

Although it understood that the North Atlantic swordfish fishery only represents a small portion of the U.S. fisheries impacting these stocks, in order to determine that that even the smallest impact does not hinder recovery there must be some certainty that recovery is occurring for the broader stocks. The extent of recovery is not clear from the scoring justifications; therefore, it is difficult to determine whether several retained species should meet scoring issue c at SG80.

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stated are not measurable improvements, but are promotion of a concept. In order to be compliant with the MSC requirements (27.11.1.4), the conditions shall be measurable improvements and an outcome shall be achieved at interim milestones. The action plan must clearly state actions to be undertaken and evidence to be provided regarding progress toward meeting the condition (e.g., working with NMFS and the US ICCAT Advisory Committee to strongly encourage the adoption of reference points and a harvest control rule gives no indication of what actions Day Boat Seafood is actually going to take and is not measurable).

To achieve each of the conditions and following process steps, the US Government will need to work intersessionally with other ICCAT Contracting Parties and Cooperating Non-Contracting Parties (CPCs). Intersessional work will include attaining political and technical support for developing and obtaining agreement to proposals and positions. The US may wish to submit joint proposals for additional weight, or have another CPCs submit and present a developed proposal instead of themselves.

Thank you for the opportunity to comment on the assessment process for this fishery.

Sincerely,



William W. Fox, Jr., Ph.D.  
Vice President, Fisheries  
World Wildlife Fund - US  
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## MRAG Americas Response to WWF Comments

### Scoring

#### PI 2.1.1

The WWF comments state that “We have concerns with regard to several retained species meeting PI 2.1.1 scoring issue c at SG80.” ... “Although it understood that the North Atlantic swordfish fishery only represents a small portion of the U.S. fisheries impacting these stocks, in order to determine that that even the smallest impact does not hinder recovery there must be some certainty that recovery is occurring for the broader stocks” (bold added).

The MSC requirements for scoring retained catch and bycatch do not consider the effects of fisheries other than those of the fishery under assessment – see Guidance to Certification sections GC3.2.4 and GC3.2.5. Certification Requirements 1.2 state “CB3.1.3 The team should only consider those management tools, measures or strategies that manage the impact the fishery is having on the P2 component in the Management Strategy PIs within P2.” The scoring for 2.1.1 albacore, bluefin tuna, and shortfin mako addresses the partial management strategy of the US government for the pelagic longline fishery of the North Atlantic and justifies the scores given in the report.

**Northern Albacore:** In the case of albacore, the WWF comments suggest that because this stock is not likely within biologically based limits, the strategy is not demonstrably effective. Even if this were true at the ICCAT level, the U.S. quota represents ~1.8-1.9% of the overall ICCAT TAC and total U.S. catches have remained well within the U.S. quota limit (in 2010 the catch was about 60% of quota). The current US measures that limit effort levels and maintain the catch within the TAC are expected to ensure that the fishery under assessment does not hinder recovery and rebuilding of the northern albacore stock.

**Atlantic Bluefin Tuna:** With respect to bluefin, ICCAT has set TACs in line with advice from its own SCRS. The U.S. quota represents about 50% of the total ICCAT TAC and includes dead discard estimates. The US fishery management comprises a range of other measures including retention limits, quota monitoring, seasons, gear restrictions, trip catch limits, and size limits. The current overall catch is expected to allow the biomass to continue to recover and the catch by US PLL vessels operating in the NW Atlantic (including the GOM) is less than 20% of the total US catch. The catch by the fishery under assessment (which excludes the GOM and Caribbean) represents only about 6% of the total US quota and 3% of the ICCAT TAC.

**Shortfin mako:** WWF contends that the measures in the US limiting shortfin mako bycatch are in place coincidentally and not part of a demonstrably effective partial strategy to reduce shortfin mako bycatch. However, as noted by WWF, a partial strategy may not have been designed to manage the impact on the component of interest specifically. In the case of shortfin mako, the assessment team maintains that the final Consolidated HMS FMP (NMFS, 2006) and Final Amendment 3 of the HMS FMP (NMFS, 2010b) represents a strategy for shortfin mako and provides a framework for implementation of management measures in response to stock status thresholds. The final actions implemented by the 2010 Amendment 3 to the Consolidated HMS FMP in response to the status of this species are to take action at the international level through international fishery management organizations to establish management measures to end overfishing of shortfin mako sharks, and to promote the live release of shortfin mako sharks in the domestic commercial and recreational shark fisheries. Closed area measures implemented under the HMS FMP (including the FEC closure) demonstrably reduced discards of pelagic sharks by 48% between 1997-99 and 2005-09 (NMFS, 2010a). In practice, the US contributes very little to mortality on this species in the North

Atlantic because there is no directed U.S. commercial fishery; in 2010, US catches represented approximately 5.4% and 3.3% of total landings of this species in the North Atlantic and in the whole Atlantic respectively.

The Assessment Team has determined that no changes in scores are necessary.

### **Condition setting**

We have made changes to the language to make the milestones in Conditions 1.1 and 1.2 more clear, incorporating the wording from the Executive Summary and suggestions from WWF, although in our view this does not change how they will function in practice.

#### **Performance indicator 1.1.2, Condition 1.1:**

The WWF comments refer to the Target Reference Point as well as the Limit Reference Point. The Condition relates only to the requirement for an explicitly defined Limit Reference Point (as opposed to a generic one) because this is the area in which the fishery is deficient with respect to PI 1.1.2. The Condition has not been modified to refer to a Target Reference Point.

The WWF comments propose a change to the timetable, such that the SG 80 scoring requirements would need to be met by the end of the fourth year of certification – i.e. by the fourth annual audit, rather than prior to recertification as the PCDR requires. Our understanding of this proposal is to maintain effectively a timeframe close to that of the original certification of the FEC fishery (about one year ahead of the current proposed certification of the US east coast fishery). In the view of the Assessment Team, such a change would have no practical effect. Changes of the type required by this Condition have no practical effect unless they are part of a re-assessment of the stock status and an associated re-setting of the management measures (mainly the catch limit in this case) to be consistent with the new or revised reference points. ICCAT Recommendation 11-02 requires the SCRS to develop a Limit Reference Point for the North Atlantic swordfish stock in advance of the next stock assessment, which is scheduled for 2013. The expectation and all current indications are that the LRP will be in place this year. However, if this does not happen, then the next assessment will likely be in 2016 (the swordfish Working Group prepares a full assessment every 3-4 years). Hence, in practice, the timetable of when the Condition is met will be driven more by the assessment cycle of ICCAT than the Condition itself. The Assessment Team therefore thinks the timing as currently stated in the PCDR (i.e. the Condition is met prior to re-certification) can be retained without any appreciable additional risk to the sustainability of the fishery.

#### **Performance indicator 1.2.2, Condition 1.2:**

As with Condition 1, the WWF comments propose a change to the timetable, such that the SG 80 scoring requirements would need to be met by the end of the fourth year of certification – i.e. by the fourth annual audit, rather than prior to recertification as the PCDR requires. Our rationale for retaining the existing timetable is the same as for Condition 1.1.

### **Client Action Plan**

Additional detail has been added to the Client Action Plan with respect to how Day Boat seafood will ensure that the conditions are met. Specific meetings of the US Advisory Committee and ICCAT that will be attended and/or monitored during the first year of certification are listed. A specific undertaking is made to report on the outcome of these meetings with respect to achievement of the milestones in the Conditions.

## Appendix 5. Surveillance Frequency

(REQUIRED FOR THE PCR ONLY)

1. The report shall include a rationale for determining the surveillance score.
2. The report shall include a completed fishery surveillance plan table using the results from assessments described in CR 27.22.1

**Table A4: Fishery Surveillance Plan**

Score from CR Table C3	Surveillance Category	Year 1	Year 2	Year 3	Year 4
[e.g. 2 or more]	[e.g Normal Surveillance]	[e.g. On-site surveillance audit]	[e.g. On-site surveillance audit]	[e.g. On-site surveillance audit]	[e.g. On-site surveillance audit & recertification site visit]

## Appendix 6. Client Agreement

(REQUIRED FOR PCR)

The report shall include confirmation from the CAB that the Client has accepted the PCR. This may be a statement from the CAB, or a signature or statement from the client.

*(Reference: CR: 27.19.2)*

## Appendix 6.1 Objections Process

(REQUIRED FOR THE PCR IN ASSESSMENTS WHERE AN OBJECTION WAS RAISED  
AND ACCEPTED BY AN INDEPENDENT ADJUDICATOR)

The report shall include all written decisions arising from an objection.

*(Reference: CR 27.19.1)*