
Prelude to Sustainability: Ending Overfishing in U.S. Fisheries

OVERFISHING: *“a rate or level of fishing mortality that jeopardizes the capacity of a fishery to produce the maximum sustainable yield on a continuing basis.”*

—Magnuson-Stevens Fishery Conservation and Management Act

INTRODUCTION

Sustainable management of fisheries is a core mission for the National Marine Fisheries Service (NMFS). Sustainable fishing has been defined as “fishing activities that do not cause or lead to undesirable changes in the biological and economic productivity, biological diversity, or ecosystem structure and functioning from one human generation to the next” (NRC, 1999). It is necessary to end overfishing in order to achieve the goal of sustainable fisheries. Ending overfishing is a priority of both the Administration and Congress. In 2006, Congress amended the Magnuson-Stevens Fishery Conservation and Management Act (MSA) with the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006 (MSRA) to include requirements to end overfishing by 2010.

This article describes the problem of overfishing in U.S. marine fisheries, efforts to address it, and the outlook for the future. The outlook is optimistic because management measures have been implemented or are under development to end overfishing for most stocks, and because the MSRA requires strict annual catch limits starting in 2010 to ensure that overfishing does not occur.

A BRIEF HISTORY OF OVERFISHING SINCE THE MAGNUSON-STEVENSON ACT OF 1976

Congress passed the Magnuson Fishery Conservation and Management Act in 1976 (1976 Act), establishing jurisdiction over fisheries out to 200 nautical miles (n.mi.), largely because foreign fleets were thought to be overfishing domestic fish stocks. The 1976 Act’s stated purpose was “to take immediate action to conserve and manage the fishery resources found off the coasts of the United States.” The 1976 Act established eight Regional Fishery Management Councils (FMC’s) to develop fishery management plans (FMP’s) for fisheries within their jurisdiction. It also established a process for phasing out foreign fishing in favor of domestic fisheries. The 1976 Act also established seven national standards for fishery management and conservation. National Standard 1 (NS1) states that “conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.”

The National Marine Fisheries Service first developed guidelines for NS1 in 1989. These guidelines directed the FMC’s to amend all FMP’s to include measurable definitions of overfishing for

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each stock or stock complex. In most FMPs', this requirement was met by defining recruitment overfishing,¹ which was generally specified in terms of a limit on fishing mortality rate. The most common definition of recruitment overfishing referred to fishing mortality rate that would reduce spawning biomass per recruit to 20 or 30% of the unfished level (Rosenberg et al., 1994). Although FMP amendments intended to end overfishing were implemented, management measures proved insufficient for many stocks, and some stocks continued to show declines in biomass.

The 1976 Act was reauthorized and amended by the Sustainable Fisheries Act of 1996 to form the Magnuson-Stevens Fishery Conservation and Management Act (MSA). The MSA introduced new requirements for specifying objective and measurable criteria for determining overfishing and for rebuilding overfished stocks. Revised NS1 guidelines to implement the new provisions were published in 1998.² These guidelines addressed an ambiguity in the statutory language by distinguishing between the condition of overfishing (fishing mortality rate too high) and the state of being overfished (stock biomass too low), and they required new FMP amendments to specify status determination criteria for determining overfishing and overfished status. The MSA also required NMFS to submit an annual report to Congress on the status of U.S. fisheries.

In spite of the strengthened provisions of the MSA, overfishing continued for some stocks in the 200-mile Exclusive Economic Zone (EEZ) for the entire 11-year period from 1997 through 2007. This was one of the major issues that Congress addressed in the 2006 reauthorization of the MSA. The MSRA requires establishment of annual catch limits (ACL) and accountability measures in all fisheries to ensure that overfishing does not occur. Fisheries subject to overfishing must have ACLs beginning in the 2010 fishing year, and all other fisheries must have ACLs beginning in the 2011 fishing year. The only exceptions to the ACL requirement are for some stocks managed under international agreements, or species such as shrimp

that have a life cycle of approximately 1 year and are not subject to overfishing (MSA section 303).

In addition, the new law specifically requires that overfishing must be ended immediately when rebuilding plans are implemented (MSA section 304(e)(3)(A)). Previously, Councils were allowed 1 year to prepare a rebuilding plan after they were notified by NMFS that a stock was overfished. The rebuilding plan could allow overfishing to continue during some years, provided the biomass rebuilding goal was met in the required time. In contrast, the MSRA now gives Councils 2 years to prepare and implement rebuilding plans that, when implemented, must immediately end overfishing.

EFFECTS OF OVERFISHING

The primary impact of overfishing is its effect on stock biomass. The biomass level that supports the maximum sustainable yield (MSY) is the target biomass mandated by the MSA. High levels of overfishing can cause biomass to decline enough that a stock is considered to be overfished, and can prevent overfished stocks from rebuilding. Relatively small levels of overfishing lead to smaller declines in biomass, but any degree of overfishing, particularly over a period of years, may prevent stock biomass from reaching the MSY level mandated by the MSA.

In addition to the effect on the specific stock subject to overfishing, overfishing can also adversely affect marine ecosystems in several ways. Overfishing can contribute to increased levels of bycatch, which can have serious ecosystem impacts (Kelleher, 2005). Overfishing may also affect predator-prey systems (Pauly et al., 1998), contribute to the collapse of coastal ecosystems (Jackson et al., 2001), and lessen the productivity of target or nontarget species by affecting their habitat (Kaiser et al., 2004).

Additionally, overfishing has long-term negative impacts on the economy. Depleted fish stocks result in a loss of economic benefits as well as a reduction in the Nation's supply of wild-caught seafood. In the short term (before a stock becomes depleted), overfishing may increase harvests and revenue from the fishery; however, these increases are not sustainable, and in the long term they will have adverse economic impacts on fishing commu-

¹Recruitment overfishing is generally defined as a reduction in spawning stock biomass to the point where recruitment is significantly reduced.

²Federal Register, 63 FR 24212, 5 May 1998.

nities. According to the Pew Oceans Commission (2003), “Increasing annual catches to long-term sustainable levels could add at least \$1.3 billion to the U.S. economy.” Ending overfishing has the potential to increase net economic benefits from currently overfished stocks (Sumaila and Suatoni, 2006).

WHY OVERFISHING PERSISTS

A number of factors have contributed to continued overfishing on U.S. stocks. They include the need by fishery managers to achieve multiple objectives, imperfect scientific knowledge about the population dynamics of stocks, the length of time needed to develop and implement new management measures, bycatch, overcapacity, and international fishing effort.

Fishery managers must weigh impacts on the fishing community against the need to quickly end overfishing. Ending overfishing necessitates reductions in catch until stocks can rebuild, and this reduces fishing income in the short term. Fisheries management stakeholders often express concerns that new regulations may affect certain sectors of the fishery disproportionately, change the character of the local processing infrastructure, or cause U.S. fishermen to lose market share to seafood imports.

Often, management decisions are based on considerations of acceptable risk. Sometimes confidence in the available scientific information is lacking, and managers may be unwilling to make major decisions based on incomplete data. More conservative or risk-averse approaches to end overfishing usually have greater short-term economic impacts on fishermen, whereas riskier approaches have fewer impacts on fishing communities in the short term but could result in even greater stock declines—and more drastic regulatory action—in the future.

In some instances, managers determine that particular management measures are adequate to end overfishing or achieve stock rebuilding, but new data or stock assessment approaches reveal that a stock is worse off than previously thought or that rebuilding plans are insufficient to meet targets. For example, the final environmental impact statement for Amendment 2 to the Consolidated Atlantic

Highly Migratory Species FMP (NMFS, 2007a) cut the sandbar shark quota by 85% of 2003–05 levels. This dramatic cut was partly due to revisions in life history parameters between stock assessments of large coastal sharks conducted in 2002 and 2006. The new data from the 2006 assessment revealed that the existing quota was too high to allow the sandbar shark to meet its rebuilding target.

A great deal of time is needed to develop and implement management measures through an FMP amendment process, often several years. Only rarely can amendments be developed and implemented in less than 2 years, and management measures do not always successfully end overfishing. For example, the process of determining stock status and addressing overfishing may consist of the following steps:

- Data for a fishing year are collected and finalized; the stock assessment is completed; the overfishing determination is made; and the Council is notified (may take 1 year).
- FMP amendment is developed and approved (may take another 2 years).
- Management measures take effect in the fishery.
- After a few years of fishing under the new measures, another stock assessment needs to be conducted to determine the overfishing status (similar to the first step, this takes about 1 year).
 - If the stock assessment determines that overfishing is not occurring, then the status determination is changed (i.e. the stock is no longer listed as subject to overfishing).
 - If the stock assessment determines that overfishing is still occurring, it may be another 2 years before improved measures can be developed and implemented.

This outline of events illustrates why overfishing can persist for a number of years, even when management takes steps to end it. Because of limitations in the availability of data and the capacity to conduct stock assessments, several years may pass between stock assessments. For example, in 1994, Amendment 6 to the FMP for the Snapper–Grouper Fishery of the South Atlantic established a one-fish-per-trip limit (commercial and recreational) for Warsaw grouper and speckled hind, and also prohibited sale of the fish. However, assessments will not take place for Warsaw grouper

and speckled hind until 2012, so the effectiveness of these 1994 measures to end overfishing will not be determined for a few more years.

The annual catch limit provisions required by the MSRA, when implemented beginning in 2010, will largely solve this problem. They require that FMP's contain ACLs and accountability measures to control fishing mortality on an annual basis and to make adjustments quickly (in the next year, if possible) to limit mortality and prevent overfishing. This is similar to the system used for some stocks on the West Coast, where overfishing is determined by comparing annual catch levels with a specified limit, called the overfishing level. For these stocks, annual changes in the status of the stock can be readily detected and reported.

Bycatch can contribute to overfishing problems. Bycatch is "the discarded catch of any living marine resource plus unobserved mortality due to a direct encounter with fishing gear" (NMFS, 2004a). Large amounts of discards of juvenile and adult fish belonging to a stock that is subject to overfishing can significantly delay the ending of overfishing. For example, it will not be possible to end overfishing of red snapper without addressing the significant levels of juvenile bycatch in the Gulf of Mexico shrimp fishery, as well as discards of juveniles in directed red snapper fisheries. In 2008, NMFS issued a final rule to implement joint Amendment 27 to the FMP for the Reef Fish Resources of the Gulf of Mexico and Amendment 14 to the FMP for the Shrimp Fishery of the Gulf of Mexico,³ which, among other things, allowed the implementation of seasonal closures of the Gulf shrimp fishery to reduce red snapper bycatch based on a 74% bycatch reduction target established in the final rule.

Overcapacity is another factor contributing to overfishing. Overcapacity is the difference between the estimated harvesting capacity and the commercial harvest quota for a fishery, which is assumed to be a target harvest level that will achieve the sustainability objectives for a fishery (NMFS, 2008a). For example, summer flounder and scup have been subject to overfishing since 2000; overcapacity in the Northeast summer flounder, scup, and black sea bass fishery was estimated to be 35% in 2004

(NMFS, 2008a). The Notice of Intent to prepare an environmental impact statement for Amendment 15 to the Summer Flounder, Scup, and Black Sea Bass FMP⁴ suggested that overcapacity in the summer flounder and scup fisheries may be having negative impacts. Harvest privilege-based management, including limited access privilege programs (LAPP's) and similar programs, has a strong track record for reducing overcapacity (NMFS, 2008a). This occurs in part because, with an effective LAPP, fishermen are generally more willing and able to accept and adapt to quota reductions or other management actions taken to rebuild stocks and prevent or end overfishing of target and non-target species.

Finally, the United States also manages a number of stocks for which international fisheries make up the majority of the fishing mortality. For example, NMFS notified the Pacific and Western Pacific Fishery Management Councils on 15 December 2004 that overfishing was occurring on the bigeye tuna stock in the Pacific. Pacific bigeye tuna are exploited by foreign fishing fleets as well as the U.S. fleet, which accounts for only a small percentage of the Pacific bigeye tuna harvest. In 2004, the estimated bigeye tuna catch by U.S. commercial fisheries was 2.3% of the 2004 total Pacific-wide bigeye tuna catch. Overfishing in this case was a result of excessive international fishing pressure, and the capacity for unilateral action by the United States to prevent or end overfishing is limited. Management of the international bigeye tuna fishery is guided by the Western and Central Pacific Fisheries Commission and Inter-American Tropical Tuna Commission. These organizations have implemented catch limits to address bigeye tuna overfishing in recent years, but NMFS feels these measures are insufficient to end overfishing.

On 16 May 2007, NMFS approved Amendment 14 to the FMP for the Pelagic Fisheries of the Western Pacific Region, prepared by the Western Pacific Fishery Management Council. Amendment 14 included measures designed to address overfishing on bigeye tuna stocks. In addition, on 7 June 2007, NMFS approved Amendment 1 to the FMP for U.S. West Coast Fisheries for Highly

³Federal Register 73 FR 5117, 29 January 2008.

⁴Federal Register 71 FR 15384, 28 March 2006.

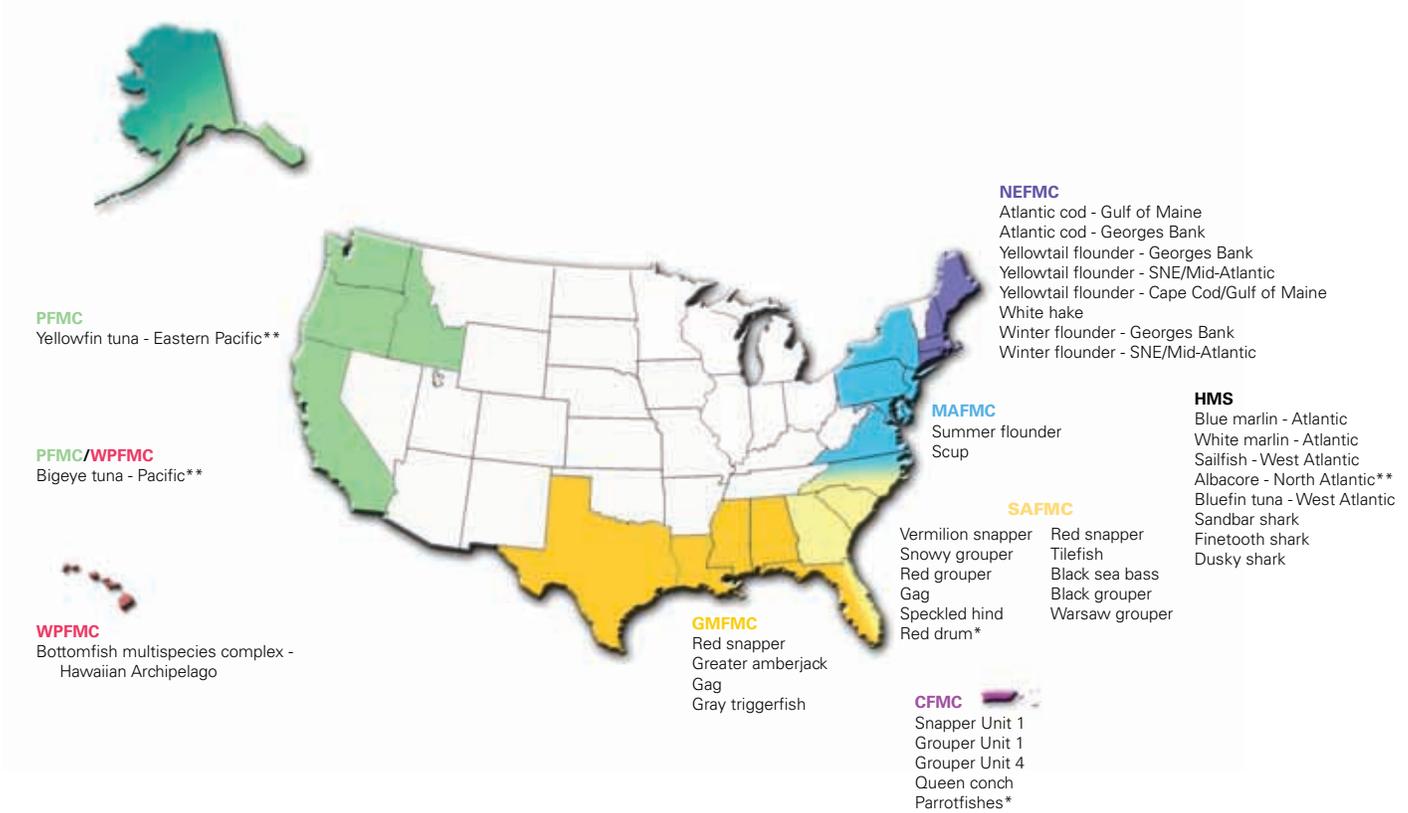


Figure 1
U.S. stocks subject to overfishing in 2007, reported by Fishery Management Councils (NMFS, 2008b). *Indicates stocks not included in the Fish Stock Sustainability Index (FSSI). **Indicates stocks where the U.S. harvest is a minor component of an international fishery.

Migratory Species, prepared by the Pacific Fishery Management Council to address overfishing of bigeye tuna stocks.

CURRENT SCOPE OF OVERFISHING

More than a decade after passage of the MSA, overfishing has ended for a number of stocks. For other stocks, overfishing has not ended, and recent stock assessments have added some new stocks to the list of overfishing stocks. In 2007, of 243 stocks and stock complexes under Federal jurisdiction with known status, 41 (17%) were listed as subject to overfishing⁵ (NMFS, 2008b). This percentage is a decrease from 26% in 2000 (NMFS, 2001). A year-by-year summary of stocks subject to overfishing shows progress in ending overfishing for some stocks, but consistent overfishing for others (Table 1).

The 41 stocks and stock complexes currently subject to overfishing are managed under 11 differ-

ent Federal FMP's (there are currently 46 Federal FMP's). All of the FMC's except the North Pacific FMC have at least one stock in their jurisdiction subject to overfishing (Figure 1). In some cases, the majority of the fishery occurs either in international waters or in waters of a U.S. state or territory, so Federal management in the EEZ alone cannot end overfishing. Most stocks subject to overfishing are in the Atlantic Ocean or Gulf of Mexico. For three of the stocks that are experiencing overfishing, the U.S. harvest or allocation is a minor component of an international fishery (Figure 1). For example, the U.S. allocation of albacore tuna in the Atlantic is less than 5% of the total allowable catch for the international fishery.

HOW THE UNITED STATES ADDRESSES OVERFISHING

The Secretary of Commerce (through NMFS) and the FMC's have implemented or begun development of management actions designed to reduce or end overfishing on the majority of the stocks that are currently experiencing overfishing. Typical

⁵Numbers differ from those reported in the National Overview, which analyzes only those stocks listed in *OLO* (a subset of the total stocks referred to here).

Table 1

U.S. stocks and stock complexes subject to overfishing, 1997–2007, by Fishery Management Council (FMC). Data are from published Reports to Congress on the Status of U.S. Fisheries (NMFS, 1997; 1998; 1999; 2001; 2002; 2003; 2004b; 2005; 2006; 2007b; 2008b), and as such are uncorrected. The North Pacific FMC is not listed because it did not have any stocks subject to overfishing in 1997–2007.

Stocks and stock complexes	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
New England FMC											
Sea scallop ¹	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	No
Haddock—Gulf of Maine	Unk	Unk	Yes	No							
American plaice	Yes	No	No	No							
Witch flounder	Yes	Yes	No	No	No	Yes	Yes	Yes	No	No	No
Windowpane flounder—Gulf of Maine/Georges Bank	Und	Und	Yes	No							
Atlantic cod—Gulf of Maine	Yes										
Atlantic cod—Georges Bank	No	No	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Yellowtail flounder—SNE/Mid-Atlantic ²	No	No	No	Yes							
Yellowtail flounder—Cape Cod/Gulf of Maine	Unk	Unk	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
White hake	Und	Und	Yes								
Winter flounder—SNE/Mid-Atlantic	Yes	Yes	No	No	No	No	Yes	Yes	Yes	Yes	Yes
Yellowtail flounder—Georges Bank	No	Yes	Yes	Yes							
Winter flounder—Georges Bank	Unk	Unk	Yes	No	No	No	No	No	Yes	Yes	Yes
Winter skate	Und	Und	Und	Und	Und	Und	Unk	Unk	No	Yes	No
New England/Mid-Atlantic FMC's											
Spiny dogfish	Und	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No
Monkfish—North ³	Und	Und	Yes	No							
Monkfish—South ³	Und	Und	Yes	No							
Mid-Atlantic FMC											
Black sea bass	Yes	No	No	No	No						
Bluefish	Yes	Yes	Yes	Yes	No						
Northern shortfin squid	No	No	Yes	Yes	No						
Tilefish	Und	Und	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No
Scup	Yes										
Summer flounder	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
South Atlantic FMC											
Scamp	Yes	No									
Red porgy	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No
Wreckfish	Unk	Yes	No								
Nassau grouper**	Yes	Yes	Yes	No							
White grunt	Yes	No									
Vermilion snapper	Yes										
Red snapper	Yes										
Snowy grouper	Yes										
Tilefish	Yes										
Red grouper	Unk	Yes									
Black sea bass	Yes										
Gag	Yes										
Speckled hind	Yes										
Warsaw grouper	Yes										
Black grouper	Unk	Yes									
Red drum**	Yes										
South Atlantic/Gulf of Mexico FMC's											
King mackerel—Gulf Group	Yes	Yes	Yes	No							
Yellowtail snapper	Unk	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No
Gulf of Mexico FMC											
Nassau grouper	Yes	Yes	Yes	No							
Vermilion snapper	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Red drum	Yes	Yes	Yes	No	No	Yes	Yes	No	No	No	No
Red snapper	Yes										
Red grouper	Unk	Unk	Unk	Yes	No						
Greater amberjack	No	Yes	Yes	Yes	Yes						

Stocks and stock complexes	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Gulf of Mexico FMC (cont.)											
Gag	Unk	Yes	Yes	Yes	Yes	No	No	No	No	Yes	Yes
Gray triggerfish	Unk	Yes	Yes								
Caribbean FMC											
Grouper Unit 2	Yes	Yes	Yes	No							
Queen conch	Yes										
Grouper Unit 1	Yes	Yes	Yes	No	No	No	No	No	Yes	Yes	Yes
Grouper Unit 4	-	-	-	-	-	-	-	-	Yes	Yes	Yes
Parrotfishes**	-	-	-	-	-	-	-	-	Yes	Yes	Yes
Snapper Unit 1	-	-	-	-	-	-	-	-	Yes	Yes	Yes
Pacific FMC											
Lingcod	No	No	No	No	No	Yes	Yes	Yes	No	No	No
Shortspine thornyhead	No	Yes	No	No	No						
Black rockfish	Unk	Unk	Unk	No	No	No	No	Yes	No	No	No
Pacific whiting	No	No	No	No	No	Yes	Yes	No	No	No	No
Darkblotched rockfish	Unk	Unk	Yes	Yes	No						
Bank rockfish	Unk	Unk	Yes	No							
Silvergrey rockfish**	Unk	Unk	Yes	Yes	No						
Yelloweye rockfish	Unk	Unk	Unk	Yes	No						
Yellowfin tuna—Eastern Pacific ^{4,5}	Und	Und	Und	Und	Und	Und	No	No	No	Yes	Yes
Petrale sole	No	Yes	No								
Pacific/Western Pacific FMC's											
Bigeye tuna—Pacific ⁵	Und	Und	Und	Und	Und	Und	Yes	Yes	Yes	Yes	Yes
Western Pacific FMC											
Bottomfish multispecies complex—Hawaiian Archipelago ⁶	-	-	-	-	-	-	-	Yes	Yes	Yes	Yes
Yellowfin tuna—Central Western Pacific ⁵	Und	Und	Und	Und	Und	Und	No	No	Yes	Yes	No
Highly Migratory Species											
Swordfish	Und	Yes	Yes	Yes	Yes	No	No	No	No	No	No
Blue marlin—Atlantic	Und	Yes									
White marlin—Atlantic	Und	Yes									
Sailfish—West Atlantic	Und	Yes									
Bigeye tuna—Atlantic ⁵	Und	Yes	No								
Albacore—North Atlantic ⁵	Und	Und	Yes								
Bluefin tuna—West Atlantic	Und	Und	Yes								
Sandbar shark	Yes										
Finetooth shark	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Dusky shark	-	-	-	-	-	-	-	-	-	Yes	Yes
Large Coastal Shark Complex ⁷	Yes	Unk	Unk								

Table 1
Continued from previous page.

Unk = Unknown overfishing determination; i.e., an overfishing definition exists in the FMP but no determination of overfishing has been made relative to that definition.

Und = Undefined; i.e., no overfishing determination exists in the FMP.

Dash (-) denotes that the stock or complex/unit was not assessed as it is currently defined.

** denotes a stock not included in the Fish Stock Sustainability Index.

¹Before 2003, this stock was listed as two stocks: Georges Bank and Mid-Atlantic. Only Mid-Atlantic had been listed as subject to overfishing.

²Before 2003, this stock was listed as two stocks, Southern New England and Mid-Atlantic. In 2000–02, only the Mid-Atlantic portion of the stock was listed as subject to overfishing.

³In 1999, the monkfish stocks were assessed as one stock.

⁴Even though this stock is shown to be under the jurisdiction of a single Council and under the management of a single FMP, it is acknowledged that both the Pacific and Western Pacific FMS's have jurisdiction over this stock, and it is managed under both the West Coast Highly Migratory Species FMP and the Western Pacific Pelagics FMP. The Pacific FMC is the lead Council for the purpose of reporting. Prior to 2004, this stock was listed as yellowfin tuna—Eastern Tropical Pacific and Central Western Pacific stocks (WPFMC jurisdiction).

⁵The U.S. harvest of this stock is a minor component of an international fishery.

⁶This complex contains up to 19 species. Prior to 2004, these species were listed as single stocks with an unknown overfishing determination.

⁷Although stocks were listed individually before 2005, large coastal sharks were assessed as a complex.

management actions include such measures as annual specifications, time/area closures, bag limits, limits on days at sea, trip limits, size limits, gear restrictions, and programs to reduce overcapacity. A few examples that highlight recent efforts to end or reduce overfishing are described below.

Overfishing of North Atlantic swordfish occurred during 1998–2001, but ended in 2002 and has not occurred since. Strong management measures implemented by the International Commission for the Conservation of Atlantic Tunas (ICCAT) and NMFS led to an end to overfishing. Specifically, all ICCAT member nations agreed to adopt a lower catch quota, and NMFS also closed nursery areas in the U.S. EEZ to pelagic longline fishing to protect juvenile swordfish.

To address overfishing of red snapper in the Gulf of Mexico, NMFS not only implemented bycatch reduction measures (described above), but it also reduced commercial and recreational quotas for red snapper, reduced the commercial minimum size limit for red snapper, reduced the recreational bag limit for red snapper, and prohibited the retention of red snapper under the bag limit for the captain and crew of a vessel operating as a charter vessel or headboat (through the same final rule).

In the Pacific Northwest, the lingcod stock was designated as overfished in 1999, with overfishing occurring for several years. Lingcod is one of more than 80 species managed under the Pacific Coast Groundfish FMP. A broad array of management tools—e.g. quotas, trip limits, depth restrictions, size limits, seasonal closures, and gear restrictions—have been applied in this fishery in recent years. Through a comprehensive approach that addressed fishing mortality from commercial, recreational,

and tribal fisheries and also considered bycatch in nontarget fisheries, NMFS successfully ended overfishing of lingcod in 2005. Although 2009 was established as the end date for the lingcod rebuilding plan, the rebuilding target was reached several years ahead of schedule while avoiding a complete closure of lingcod fisheries.

Supporting and encouraging international efforts to end overfishing are critical to NMFS' ability to address overfishing. NMFS will need to work closely with the Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific (WCPFC) and the Inter-American Tropical Tuna Commission (IATTC) to end the overfishing of bigeye tuna and yellowfin tuna in the Pacific.

NMFS also faces a challenge to persuade ICCAT nations to adopt tough conservation measures to end overfishing of eastern Atlantic bluefin tuna. Although the United States is not a participant in eastern Atlantic bluefin fisheries, overfishing of this stock affects the availability of bluefin in U.S. waters due to the mixing of eastern and western stocks. In 2007, the United States called for ICCAT to implement a 3- to 5-year moratorium on the eastern Atlantic and Mediterranean bluefin tuna fishery. The proposed moratorium failed to win sufficient support at ICCAT's November 2007 meeting.

Strong and effective management measures have been accompanied by monitoring and tracking of stock status. Each year NMFS reports to Congress on the status of the U.S. fisheries, as mandated by the MSA. This report characterizes all managed marine fish stocks with known status under two broad categories: 1) subject to overfishing, and 2) overfished. In addition to the annual report, since the third quarter of 2005 NMFS has reported quarterly on the status of stocks. These reports are available online (<http://www.nmfs.noaa.gov/sfa/statusoffisheries/SOSmain.htm>).

Ending overfishing is a key component of NMFS' Fish Stock Sustainability Index (FSSI), a performance measure of the sustainability of 230 fish stocks selected because of their importance to commercial and recreational fisheries (Table 2). These stocks represent about 90% of all commercial landings in the United States. The FSSI is a performance measure under the Government

Table 2

Fish Stock Sustainability Index (FSSI) scores as reported in quarterly updates on the status of U.S. stocks. The maximum possible FSSI score is 920, based on 230 stocks and four points per stock: one point for known status, one point for not subject to overfishing, one point for not overfished, and one point if biomass is at or above 80% B_{MSY} . More information on quarterly updates and FSSI scoring is available online (<http://www.nmfs.noaa.gov/sfa/statusoffisheries/SOSmain.htm>).

Quarter and year	FSSI score
3 rd quarter 2005	481.5
4 th quarter 2005	495.5
1 st quarter 2006	496
2 nd quarter 2006	495
3 rd quarter 2006	501
4 th quarter 2006	506.5
1 st quarter 2007	508.5
2 nd quarter 2007	516
3 rd quarter 2007	524
4 th quarter 2007	531
1 st quarter 2008	531

Performance and Results Act (GPRA), and NMFS' GPRA performance rating is tied to increases in the FSSI. The FSSI score increases as overfishing is ended and stock biomass increases. Additional and more comprehensive stock assessments also increase the FSSI score by increasing the number of stocks with known status. The maximum possible FSSI score is 920, based on 230 stocks and four points per stock. The FSSI score has increased from 481.5 in the 3rd quarter 2005 to 531 in the 1st quarter 2008, and the goal is to increase the score further as overfishing is ended.

OUTLOOK FOR ENDING OVERFISHING

Many of NMFS' efforts to end overfishing will revolve around implementing the MSRA. This new law is groundbreaking in several respects related to ending overfishing: it mandates the use of annual catch limits and accountability measures, provides for widespread market-based fishery management through limited access programs, strengthens law enforcement, and calls for increased international cooperation.

The NMFS also is using tools such as the *Annual Report to Congress on the Status of U.S. Fisheries*, quarterly updates, and the FSSI to get a more complete picture of overall trends in the sustainability of U.S. fisheries. These tools are helping us identify areas of progress, as well as areas needing attention.

The Administration is committed to ending overfishing and recognizes the importance of FMC action, and Secretarial action if necessary. This commitment, coupled with the annual catch limit measures in the MSRA, sets the tone for a new era of fishery management with a strong mandate to end overfishing and with increased accountability for results.

Although the MSRA provided for some sweeping changes to the management of our Nation's fisheries, Congress reaffirmed its confidence in the FMC system by maintaining it as the framework for management of U.S. fisheries. NMFS remains committed to working closely with the FMC's to end overfishing and to rebuild overfished stocks, while taking into account other important factors as mandated by law. In addition, NMFS will continue its commitment to work with our many

partners and constituents to achieve sustainable fisheries, providing new opportunities for constituent feedback and collaboration. The ultimate result should be dynamic and responsive management that provides for long-term sustainability in U.S. fisheries. With successful implementation of the overfishing provisions in the MSRA, and with continued careful tracking and monitoring of overfishing status—along with sufficient resources to conduct needed stock assessments—we should see an end to persistent overfishing, and future instances of overfishing in our Nation's fisheries should be few and brief.

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