

Multispecies Monitoring Report

October 29, 2001

Fishermen's Report Summary and Background

Overview

The accompanying document, “Report of the new England Fishery Management Council’s Multispecies Monitoring Committee,” Oct 29., 2001 provides the Council, relevant Agencies, and the public with an assessment of the effectiveness of management measures implemented under authority of Amendment 7 and subsequent framework adjustments to the Northeast Multispecies Fishery Management Plan. Additionally, the report provides projections of present stock conditions and offers both an analysis of changes in fishing mortality necessary to achieve FMP objectives and, in the case of Amendment 7 stocks, specific sets of measures sufficient to attain these changes. This is the sixth cycle of this process.

The Council initiated the annual adjustment process in 1996 in an effort to balance two countervailing arguments. During the development of Amendment 7, analysis indicated that even an accelerated reduction in days at sea allocations to 50% of baseline levels would be insufficient to reduce fishing mortality rates quickly enough to a level which would diminish risk of stock collapses and allow eventual rebuilding to the prescribed biomass thresholds. On the other hand, the fishing industry was critical that the accelerated schedule of mortality reductions left no time to analyze the effects of existing measures before moving on with additional cuts. The annual adjustment process is the product of a compromise between these positions.

The annual adjustment process utilizes the framework adjustment to accomplish its objectives. Stripped of legal jargon, this process entails an “expedited rulemaking” where some of the analytical requirements and much of the opportunity for public comment are waived in the interest of efficiency. In general, this process is accomplished within the span of two consecutive Council meetings. An affirmative vote by the Council authorizes the NMFS regional administrator to publish either a proposed rule or final rule in the Federal Register, as circumstances dictate.

Circumstances Unique to the 2002 Annual Adjustment

For the second year, the Council remains in transition between the standards and reference points imposed by Amendment 7 and the Sustainable Fisheries Act compliant overfishing definitions embraced by the Council in Amendment 9 to the Northeast Multispecies FMP.

The council proposes to fully implement Amendment 13 to the Northeast Multispecies FMP at the earliest feasible date. This Amendment will increase the number of stocks under direct management from five to nineteen, provide up to date assessments for each managed stock and will impose rebuilding or maintenance programs appropriate to each condition using SFA compliant reference points.

The complexity of this task has proven more arduous than originally anticipated. Accordingly, the implementation of Amendment 13 has been delayed and an implementation date remains uncertain. Consequently, the Council has decided to consider the appropriateness of another annual adjustment for the fishing year beginning 5/01/02. This adjustment may be incorporated into an ongoing framework adjustment action, framework adjustment No. 36.

The Multispecies Monitoring Committee Process

The MSMC meets annually in October. At these meeting information on landings of all multispecies stocks for the full preceding year and current partial year are provided as well as an approximation of fishing effort from both the days at sea (DAS) and vessel trip report (VTR) data bases.

The most recent stock assessments are made available to the Committee. Historically these assessments are the peer reviewed products of the SAW/SARC (Stock Assessment Workshop/Stock Assessment Review Committee) process. Due to the unrelenting exigency of the management process products such as the Northern/Southern Demersal Working Groups and the Transboundary Resources Assessment Committee are employed to obtain up to date information.

Armed with this information and with knowledge of any recent changes in fishing conditions such as management measures, effort shifts, or changes in selectivity, the MSMC projects a fishing mortality rate which could reasonably be expected to prevail through the current year for each stock in the multispecies complex.

Using a beginning stock biomass obtained from the most recent assessment and applying the estimated fishing mortality rate for that stock the MSMC projects a stock biomass for the conclusion of the fishing year.

In 2001, as was the case in 2000, landings information was available only through June. Given the variability and unpredictability of landings patterns, this amount of information is not sufficient to support a projection of landings for a full calendar year. Hence, this report uses the assumption that fishing mortality for 2001 equals that of 2000 for projections and calculation of TAC's.

Comparison of the estimated fishing mortality rates and projected stock biomass levels with the targets adopted by the Council in the Multispecies F.M.P. provides a criterion to measure the sufficiency of the current year management measures.

Under the Amendment 7 standards, the MSMC is charged with providing target TAC's for five stocks (GOM and GBK Cod, GBK Haddock, GBK and SNE Yellowtail) to insure that the fishing mortality rate thresholds specified by the Amendment will not be exceeded. If

changes from current TAC levels are necessary, then the MSMC recommends management options which analysis indicates are sufficient to attain the desired outcome.

Sources of Uncertainty

As with every predictive endeavor, the MSMC process entails an inevitable level of uncertainty. The MSMC utilizes the uncertainty in stock sizes and fishing mortality from the assessment in the projections. However, in modeling the outcomes of changes to management measures, certain assumptions (e.g., changes in fishermen's behavior in response to restrictions, the catchability of fish remains in direct proportion to recruited biomass) must be made. Absent the time or means to verify such assumptions, a level of uncertainty pervades the process.

Recently, additional factors have provided new sources of uncertainty. First, the administrative procedures of NMFS and the Council have moved the report deadline back one month (from December to November). This schedule reduces the amount of current year landings and effort data available for analysis.

Secondly, there has been a decline in the quantity and quality of data available. The reduction in biological samples increases the uncertainty in the assessment results.

Third, management actions intended to reduce the landings of Gulf of Maine Cod had unforeseen consequences. During 1999, the daily landing limit was adjusted four times and substantial discarding occurred. Absent substantial information from observed trips, the 1999 MSMC based its assessment and projections processes were based on a range of different assumptions of Cod discards from zero to 2,500 metric tons.

In June, 2001, SAW 33 determined the level of GOM Cod discards to be 2,500 MT in 1999 and 1,000 MT in 2000. This determination was complicated by a lack of observer data and the wide variability of cod discards reported by fishermen in the VTR data.

The Gulf of Maine Cod saga represents a case study of management actions which confound identification and characterization of a problem with the ultimate result of delaying any resolution.

Transition to Sustainable Fisheries Act Mandates

In 1996, Congress placed new levels of responsibility on NMFS and the Regional Fishery Management Councils with enactment of the Sustainable Fisheries Act (SFA). Among numerous other provisions, the Act identified "optimum yield" as an overarching objective. It identified as a concept the biomass level which over time will produce the maximum sustainable yield from a given stock. This concept is usually identified by the symbol B_{MSY} .

Furthermore, the Act identified a biomass level - usually one half B_{MSY} - as a minimum biomass threshold. NMFS and the Councils were required on an annual basis to provide a report on stock status for the Secretary of Commerce. Stocks below or declining toward their biomass threshold must have rebuilding plans that would rebuild biomass to B_{MSY} as quickly as possible, usually within ten years.

Subsequently, under another SFA requirement, NMFS published in May, 1998 a set of guidelines intended to clarify the intent of Congress and facilitate the preparation of SFA compliant fishery management plans. These guidelines identified the form of an “MSY Control Rule” which is basically a function that relates stock biomass to an allowable fishing mortality rate.

Subsequently, in mid 1998 an “Overfishing Definition Review Panel” completed a report, which identified specific values for control rules applicable to most New England stocks. Notably each control rule contained the following benchmarks:

- (1) the value of B_{MSY}
- (2) the value of $B_{threshold}$ (usually $1/4$ to $1/2 B_{MSY}$ from which B_{MSY} can be achieved in no more than 10 years).
- (3) the value of F_{MSY} (a mortality rate which applied to a stock at B_{MSY} will produce maximum sustainable yield).
- (4) a curve depicting F_{target} (a series of mortality rate values which if applied to a corresponding biomass will allow the stock to rebuild to B_{MSY} within the prescribed time.

In addition each control rules identifies an “overfished condition” which occurs when biomass declines below $B_{threshold}$ and “overfishing” which occurs whenever fishing mortality exceeds F_{msy} .

The establishment of these criteria greatly diminish the flexibility available to a Fishery Management Council which must eliminate overfishing or an overfished condition.

In October 1998, the NEFMC submitted Amendment 9 to the Northeast Multispecies FMP. With this document, the Council and NMFS basically established agreement on values and parameters for the terms of reference inherent in the control rules for the principal New England groundfish stocks.

The final step to implement the requirements of the SFA, however, is yet to be taken. Currently the Council continues development of Amendment 13 to the Multispecies FMP. Among the objectives of Amendment 13 is the development and implementation of rebuilding plans for the principal groundfish stocks.

Comparison of Amendments 7 and 13

There are several fundamental differences between the provisions of Amendment 7 and any SFA - compliant rebuilding programs which may be incorporated into Amendment 13.

First, Amendment 7 applies discrete measures to only five stocks (GOM and GBK Cod, GBK Haddock, and GBK and SNE Yellowtail). Eleven other stocks were aggregated within a 25,500 metric ton TAC with no mechanism for discrete management. In contrast Amendment 13 will seek to manage 19 individual stocks.

While Amendment 7 identifies a target biomass for all discrete stocks (except GOM Cod), there is no designated time for its attainment. Instead, the objective is a fishing mortality rate ($F_{\max}$ for GOM Cod, $F_{0.1}$ for all others) with a target TAC as proxy.

In contrast SFA requires a time certain for attainment of B_{msy} with a maximum duration of 10 years except in rare circumstances. The clock timing the rebuilding schedules actually started in November 1999 when Amendment 9 was approved.

The MSMC Directive

For the second year, the transition from Amendment 7 to the SFA compliant rebuilding objectives that will be promulgated by Amendment 13 complicates the task of management. As the implementation date of Amendment 13 remains uncertain, the Council must remain faithful to its Amendment 7 obligations while keeping a wary eye on conditions in stocks which will be subject to Amendment 13 rebuilding programs.

To assist the Council in developing rebuilding programs for overfished stocks the MSMC has developed the term of reference known as F_{MSMC} . In simple terms, F_{MSMC} is a fishing mortality rate which applied to a stock under prevailing conditions will result in rebuilding to the biomass threshold within the time limits prescribed in the overfishing definitions adopted under Amendment 9.

The accompanying table lists the five groundfish stocks which received discrete management under Amendment 7. In addition, approximately 12 stocks will also be afforded similar assessment subject to available information. Under the SFA requirements, rebuilding programs for each stock determined to be below its biomass threshold must be established.

Comparison of Amendment 7 and Proposed Amendment 13
Fishing Mortality Rate and Biomass Targets for Five Major Groundfish Stocks

Stock Name	2000 Stock Biomass (MT)	2000 Fishing Mortality Rate	Amend. 7 SSB Target (MT)	Amend. 7 Fishing Mortality Rare Target	Amend. 9 Biomass Target (MT)	Proposed Amend. 13 Fishing Mortality Target ($F=F_{MSMC}$) ¹
GBK Cod	29,003 MT	F=0.22	70,000 MT	$F_{0.1} = 0.18$	108,000 MT	F=0.09
GOM Cod	13,114	F=0.73	None Specified	$F_{0.1} = 0.15$ $F_{MAX} = 0.27$	90,300	F=0.15
GBK Haddock	64,075 MT	F=0.19	80,000 MT	$F_{0.1} = 0.26$	105,000 MT	$F_{msv} = 0.20$
GBK Yellowtail	43,064 MT	F = 0.14	10,000 MT	$F_{0.1} = 0.25$	42,980 MT	F= 0.27
SNE Yellowtail	5,414 MT	F = 0.30	10,000 MT	$F_{0.1} = 0.27$	15,718 MT	F = 0.17

¹ These values were determined by MSMC in 1999 or 2000. The Groundfish PDT has proposed different fishing mortality rates for Amendment 13.

As can be discerned among the stocks listed in the table, Georges Bank Cod and Gulf of Maine Cod still require substantial reductions in fishing mortality in order to attain their Amendment 9 biomass targets within the allowable time frame.

As is often the case with multispecies fisheries, the continual conflict between protecting weak stocks while allowing access to commingled stronger ones will tax the Council's ingenuity. The results of efforts to protect Gulf of Maine Cod while allowing limited fishing for other species have brought consternation to scientists, fishermen and managers alike.

Socio - Economic vs Biological Issues

The New England Fishery Management Council has chosen to manage groundfish through a complex set of input controls. The foundation of these measures is the Days at Sea program. Presently vessels representing the majority of groundfish catching power are limited to a nominal fifty percent of their base line fishing effort.

Despite this overall nominal reduction in fishing effort, the Council has frequently been obliged to impose additional measures when target TAC's for stocks under discrete management (particularly Gulf of Maine Cod) have been exceeded. These measures generally incorporate landing limits or temporal closures of areas where high catches of the impacted stock have occurred.

The November, 2001 Multispecies Monitoring Committee report reveals some possible shortcomings to this management approach. For instance, despite a 2,000 lb. daily trip limit and

a one month closure of a significant portion of the Georges Bank cod stock range, year 2000 fishing mortality remained at 0.22, slightly above the $F_{0.1}$ target of 0.18.

The case of Gulf of Maine cod is even more emphatic. In May 1998, the 900 square nautical miles Western Gulf of Maine closed area was implemented. By May 1999, a complex set of temporal or “rolling” closures, some explicit and some triggered by cod catches was in place. The cumulative result of this measure, when fully implemented, was the closure of 31 thirty minute block-month combinations during the fishing year May 2000 through April, 2001.

In addition, the daily landing limit for Gulf of Maine Cod was reduced to 700 lbs. in May 1998 and went through five additional permutations ranging from 30 to 400 lbs. by March 1, 2000. As a further disincentive to target GOM Cod, the provisions of the running clock program were changed to inhibit using latent days to target cod and to increase the DAS cost burden on any cod landed in excess.

Notwithstanding these measures, SAW 33 identifies the 2000 fishing mortality rate on this stock as $F_{2000} = 0.73$, 2.7 times the present F_{max} target and nearly five times the MSMC recommended $F_{0.1}$ target. The SAW report estimated discards at 2,500 MT for 1999 and 1,000 MT for 2000.

Though the 2000 fishing mortality declined compared with pre -Framework 25 (F in 1996-1997 when the framework adjustments specific to GOM Cod began was about $F=1.0$), the change as of this assessment is far less than was projected.

As management of our fisheries matures and additional standards are applied, it is becoming apparent that a utopian age of rebuilt fisheries and relaxed management restrictions will not arrive anytime soon.

Stock specific measures appear to have been beneficial in some cases (Georges Bank Haddock, Georges Bank Yellowtail) but have produced muted results in others (Gulf of Maine Cod, Southern New England Yellowtail). Other stocks may have benefited from broad overall declines in fishing effort due to days at sea or capacity reductions.

Recruitment events are the products of an elusive combination of spawning biomass levels and environmental factors. While Georges Bank Haddock may be entering a cycle of dependable recruitment, Georges Bank Cod and Southern New England Yellowtail have not shown such proclivity. Singular recruitment events may soon alter the dynamic of Gulf of Maine Cod and White Hake.

Irrespective of the course which nature sets, fishing effort will remain problematic. Presently, days at sea utilization is about constant with only about one third of allocated days actually used. Latent effort activation continues as a possible impediment to liberalized access.

Finally, the issue of overall capacity in the New England groundfish fleet remains unresolved. A disquieting characteristic of some fishery management programs is the trend toward short, intensive seasonal fisheries. The social and economic cost of this phenomenon is well documented.

The expectation for New England groundfish stocks is that a sustainable exploitation rate even at a fully rebuilt biomass can be only 20%, or one fish in five, each year. The true genius of successful management may be centered less in the biology of fish than in the milieu of social and economic science.