# Updated 9/27/02. The following corrections were made to the Multispecies Monitoring Committee Report:

- <u>Executive Summary</u>: Table 1, Projected Stock Status, corrected.
- Chapter 3: DAS tables 3.1-3.9 and figures 3.1-3.7 updated with corrected values.
- *Chapter 5: Discussion on redfish updated.*

#### **EXECUTIVE SUMMARY**

### DAS Usage

DAS usage in fishing year 2000 increased to 57,078 DAS, a 10% increase from 1999 (51,753). Only 36% of allocated DAS were used, a 4% increase from 1999. As in previous years, allocated DAS greatly exceeded the DAS used. Allocated DAS increased to 160,727 DAS. For vessels that used DAS, individual DAS vessels used 86% of their allocated days, fleet DAS vessels used 49% of their allocated days, and hook gear vessels used 20% of their allocated DAS.

### Stock status for Amendment 7 stocks of critical importance

Stock status for for Georges Bank cod, Georges Bank haddock, Georges Bank yellowtail, Southern New England yellowtail, and Gulf of Maine cod is summarized in Table 1.

Stock status has improved for Georges Bank haddock and Georges Bank yellowtail. Fishing mortality rates in 2000 are below the Amendment 7 targets. Spawning stock biomass has increased for these stocks and recent recruitment is good. Spawning stock biomass has increased for Georges Bank cod but remains well below the Amendment 7 threshold and recent recruitment is poor. Fishing mortality for Georges Bank cod is above the Amendment 7  $F_{0.1}$  target. Stock status has not changed for southern New England yellowtail. Spawning stock biomass remains low compared to the Amendment 7 threshold and fishing mortality is likely to be near the  $F_{0.1}$  Amendment 7 target.

Fishing mortality on Gulf of Maine cod is well above the Amendment 7  $F_{max}$  target. Spawning stock biomass has increased. With the exception of the 1998 yearclass, recent recruitment has been poor. The 1998 yearclass is above average and will become fully recruited in 2002.

## **Recommended TTACs for 2002**

Recommended TTACs for Georges Bank cod, Georges Bank haddock, Georges Bank yellowtail, Southern New England yellowtail, and Gulf of Maine cod are shown in Table 2. The MSMC was unable to project a 2002 TTAC for Southern New England yellowtail. Given the status of Southern New England yellowtail, the MSMC recommends setting the 2002 TTAC equal to the the 2001 TTAC. The Gulf of Maine cod assessment now includes discards and recreational landings. The recreational landings and discards are also embedded in the total allowable catch. These components have been subtracted from the total allowable catch in order to estimate the Total allowable landings for Gulf of Maine cod.

Stock	2000 F <sub>fully recruited</sub>	SSB	Recent	2001 SSB (mts)	2001 Biomass (mts)	
	relative to Amend 7	relative to	Recruitment	(%) of Amend 7 threshold	% of Amendment 9 biomass target	
	target	timeseries		Amendment 7 SSB threshold	Amendment 9 biomass target	
GB cod	Near target	Low	Poor, below 25 <sup>th</sup> percentile.	30,875 mts (SSB)	36,698 mts (mean biomass)	
		Increasing		44%	34%	
				Amend 7 threshold =70,000 mts	B <sub>MSY</sub> =108,000 mts	
GB haddock	Below target	Medium	Average <sup>1</sup>	80,534 mts (SSB)	80,534 mts (SSB)	
		Increasing		100%	77%	
				Amend7 threshold =80,000 mts	SSB <sub>MSY</sub> =105,000 mts	
GB yellowtail	Below	Above	Above	47,127 mts (SSB)	55,437 mts (mean biomass)	
		average	timeseries mean	357%	128%	
		Increasing		Amend7 threshold =10,000 mts	${}^{2}B_{msy} = 43,470 \text{ mts}$	
SNE yellowtail <sup>4</sup>	Near target	Low	Poor, slightly above 25 <sup>th</sup>	Well below (SSB)	Very low (mean biomass)	
			percentile <sup>3</sup>		9-15%	
				Amend7 threshold $= 10,000$ mts	${}^{4}B_{Msy} = 62,870 \text{ mts}$	
$GOM \text{ cod}^5$	Well above F <sub>max</sub>	Low	Poor but 1998 Year class is	18,200 mts (SSB)	24,424 mts (Jan 1 stock biomass)	
		Increasing	above timeseries mean		Approximately 27%	
				Amend7 threshold not defined	$B_{MSY} = 90,300 \text{ mts}$	

Table 1. Projected stock status of GB cod, GB haddock, GB yellowtail, SNE yellowtail, and Gulf of Maine cod through 2001.

<sup>1</sup> Haddock recruitment timeseries mean 1963-2000. Recruitment prior to 1963 was higher than 1963-2000.

<sup>2</sup> Georges Bank YT  $B_{msy} = 43,600$  according to TRAC 2001. TRAC 2000 lists  $B_{MSY} = 54,074$ . Amendment 9 lists  $B_{msy}$  as 46,850 mts. Estimates of  $B_{msy}$  have been unstable.

<sup>3</sup> Recruitment based on 1997, 1998 and 1999 yearclasses. 1999 yearclass estimated from NEFSC survey index.

<sup>4</sup> SNE YT results are based examining survey indices against  $B_{msy}$  scaled to survey biomass.  $B_{MSY}$  estimate taken from NDWG Report (1999). <sup>5</sup> Reference points re-estimated by SARC 33 using Sissenwine-Shepherd method.

Table 2.Recommended 2002 TTAC's for Georges Bank cod, Georges Bank haddock,Georges Bank yellowtail, Southern New England yellowtail, and Gulf of Maine cod.

Year		GB cod	GB Haddk	GB YT	SNE YT	$\operatorname{GOM}\operatorname{COD}^2$	$\operatorname{GOM}\operatorname{COD}^2$
		Target F <sub>0.1</sub>	Target F <sub>0.1</sub>	Target F <sub>0.1</sub>	Target F <sub>0.1</sub>	Target F <sub>max</sub>	Target F <sub>0.1</sub>
2002	Recommended	3482	11763	7355	949	Com 3062	Com 1789
	USA TTAC					Rec 672	Rec 393
						Disc 747	Disc 437
	Assumed 2002	2100	6985	3450			
	Can quota <sup>1</sup>						
	Total TTAC	5582	18748	10805		4482	2619

<sup>1</sup> MSMC assumes that the Canadian 2002 quota will equal the Canadian 2001 quota. Assumed Canadian 2002 quota is subtracted to obtain the USA quota.

 $^2$  Total TTAC for GOM cod includes discards and recreational landings. These have been backed from the total TTAC to give the commercial total allowable landings (TTAL). Amendment 7's target F for Gulf of Maine cod is  $F_{max}$ .

# Summary of reductions in fishing mortality and landings needed for achieving Amendment 9 rebuilding schedule

Large reductions from  $F_{2000}$  are needed to achieve the Amendment 9 control rule rebuilding timeframes for Georges Bank cod, Southern New England yellowtail and Gulf of Maine cod. Similar reductions in the fully recruited fishing mortality are needed for white hake, American plaice, and Cape Cod yellowtail.

#### MSMC's Management Recommendations for Fishing Year 2002

The reductions needed to achieve either  $F_{max}$  or  $F_{0.1}$  for Gulf of Maine cod are substantial. The MSMC is concerned that it may not be possible to achieve the Amendment 7 mortality targets for GOM cod through a framework adjustment. Previous attempts to achieve  $F_{max}$  for GOM cod via frameworks have not been successful (e.g., Frameworks 20, 25, 26, 27, 31, 33). Given the magnitude of the reduction and severity of biological and social impacts associated with this annual adjustment, the development of management measures needed to achieve this reduction are more appropriate for an Amendment than a Framework adjustment. The MSMC notes that reductions in fishing mortality are needed for other species (SNE YT, Cape Cod yellowtail, American Plaice, White hake, Mid-Atlantic YT) in order to achieve Amendment 9 objectives. It is critical that the measures chosen to reduce mortality for GOM cod and GB cod do not increase mortality on these other stocks. The Council may want to consider implementing measures to achieve a partial reduction in F for GOM cod with the goal of developing and implementing Amendment 13 to rationalize management for the groundfish resource no later than the 2003 fishing year. The MSMC strongly recommends that an annual adjustment not be prepared for the 2003 fishing year in order to allow for development and implementation of Amendment 13 as soon as possible. Framework 36 should specifically state the next annual adjustment will be prepared for FY

2004.

The MSMC developed the following three options for the 2002 fishing year. The first two options should achieve the Amendment 7 mortality targets for GB cod, GB haddock, GB yellowtail flounder, SNE yellowtail flounder, and GOM cod. The last option will provide a reduction in GOM and GB cod mortality and provide some protection to strong incoming GOM cod year classes, but is unlikely to achieve the Amendment 7 mortality targets. If the last option is selected, it will be imperative to adopt Amendment 13 without delay to achieve M-S Act requirements.

Recommended DAS targets in 2002 are based on applying the percent reduction to average used DAS (mean=53,922 DAS) over the past three years for fishing years 1998, 1999, 2000).

# **Option 1**

- Reduce used DAS by 65% overall (*a reduction to 18,873 DAS overall*)
  - No seasonal closed areas
  - Maintain current WGOM closed area
  - Maintain GB and NLCA year round closed areas
  - No possession limits
  - 5 fish per angler per trip possession limit (cod) for recreational/party/charter vessels in the Gulf of Maine.

# **Biological impacts**.

• GAMS model results suggest a 58% reduction in GOM cod F and a 52% reduction in Georges Bank cod F.

# Advantages:

- Likely to achieve Amendment 7 and 13 mortality objectives for almost all stocks
- Easily enforced
- Reduces complexity of regulations
- The 5 fish bag limit reduces party charter cod landings by about 30-45%.

# Disadvantages

- Excessive mortality reduction for many stocks that do not need it (GB haddock, witch flounder, GB yellowtail flounder, etc.)
- Not economically feasible without DAS consolidation provisions, which cannot be implemented through a framework adjustment
- Massive DAS reductions may focus effort on inshore stocks (such as GOM cod), especially with removal of trip limits

# Option 2

- Reduce used DAS by 20% overall (reduction to 43,138 DAS)
- Prohibit front loading of DAS clock

- No changes in seasonal closed areas
- Maintain current WGOM, GB, and NLCA closed areas. In addition, close thirty-minute squares 124, 128, 129, 132, and 133 year round
- 800 lbs-day and 4,000 lbs-trip possession limit for GOM cod
- No recreational/party/charter fishing allowed into the WGOM closed area, thirty-minute square block 132, and the northern half of thirty minute square block 124

# **Biological impacts**

• Gams model results suggest a 53% reduction in GOM cod F and a 15% reduction in Georges Bank cod

# Advantages:

- Meets GB cod Amendment 7 mortality objective
- Achieves similar mortality reduction on GOM cod fishing as option 1, but without sacrificing yield on other stocks.
- May reduce fishing mortality on some GOM flatfish (CC yellowtail flounder and plaice)
- Reduces GOM cod discards resulting from low trip limits

# Disadvantages

- May not achieve GOM cod F<sub>max</sub> mortality objective
- Extensive economic and social impacts for fishermen that rely on proposed expanded year round closure areas.
- Unpredictable effort shifts may have adverse effects that hamper Amendment 13 success

# **Option 3**

- Reduce used DAS by 10%-20% (a 20% reduction is equivalent to 43,138 DAS; 10% reduction equivalent to 48,530 DAS.)
- Maintain current WGOM, GB, and NLCA closed areas
- In addition to current seasonal closures, close block 124 in May, block 133 in June
- Trawl mesh increased to 6.5 inch diamond or 7 inch square throughout the GOM, gillnet mesh increased to 6.5 inch minimum throughout GOM
- 800 lbs-day and 4,000 lbs-trip possession limit for GOM cod
- Minimum cod size of 24 inches for all recreational/charter/party vessels
- Recreational/charter/party vessels prohibited from the WGOM closed area

# **Biological impacts**.

The GAMS model model projects that Option 3 with a 10% reduction in used DAS reduces fishing mortality by 12% for GOM cod and 9% for Georges Bank cod. The GAMS model projects Option 3 with a 20% reduction in used DAS reduces fishing mortality 21% for GOM cod and 17% for Georges

Bank cod.

#### Advantages

- Meets GB cod Amendment 7 mortality objective
- Reduces F on GOM cod
- Increases survival of 1998 GOM cod year class during 2002
- Reduces GOM cod discards caused by low trip limit
- Mesh increase postpones mortality on many stocks

#### **Disadvantages**

- May not meet GOM cod F<sub>max</sub> mortality objective
- Plan is not likely to be implemented until August, 2002. This diminishes the effectiveness of mesh increase for protecting the 1998 yearclass which becomes fully recruited in January, 2002.
- Effect on GOM cod 1998 year class lasts one year, additional measures need to be considered for 2003
- Additional costs to industry due to gear changes; new mesh may not be available in time to benefit 1998 year class
- Extensive economic and social impacts for fishermen that rely on proposed expanded year round closure areas
- Unpredictable effort shifts may have adverse effects that hamper Amendment 13 success
- Loss of revenue from non-cod species

#### Seasonal limitation on DAS usage

One way rolling closures reduce mortality is by displacing effort from areas of high cod catch rates into areas with lower catch rates. In searching for an alternative to additional seasonal closures, the MSMC considered shifting effort temporally rather than spatially – that is, shifting effort from time periods of high catch rates into time periods of lower catch rates. The specific alternative considered was to limit each vessel to 8 DAS per month during the months of May, June, November, and December in the areas that provided 90 percent of the cod landings. This proposal only provided small reductions in GOM cod mortality (about 5 percent). As drafted, it also appears to have disproportionate impacts on vessels that do not make day trips, though adding a trip limitation (such as 8 DAS or 8 trips) might distribute the impacts more evenly and would likely provide a some additional benefit that cannot be analyzed because of data limitations. The MSMC did not pursue this option further.

## **Recreational Fishing Measures**

All of the above options include additional measures for recreational fishing vessels. The MSMC recommends this step because the most recent GOM cod assessment includes recreational landings in its estimate of fishing mortality. Recreational GOM cod landings continue to increase: they accounted for 23 percent of landings and 19 percent of the total catch in 2001. Continued expansion of

the recreational fishery will prevent achieving the mortality objectives, even if the commercial landings are controlled. The MSMC did not have time to fully analyze the recreational measures in the four options. Further analysis will be needed to determine the biological and economic impacts of these proposals.

## **Other Recommendations**

The NEFMC should ensure that management measures designed to reduce mortality on GOM cod do not increase effort on other stocks. For example, the rapid increase in Cape Cod yellowtail landings in 2000 suggests that the simultaneous May closures for Georges Bank cod and Gulf of Maine cod may have increased effort in Blocks 124 and 125 during this time. The Georges Bank May closure may have contributed to increased effort on both Cape Cod yellowtail and GOM cod.

#### **Observers**

The MSMC noted in 1999 that restrictive trip limits have the potential to generate significant discards of legal size fish, and recommended implementing a dedicated sea sampling program designed to collect fishery information. SAW 33 reviewed available sea sampling data and noted the sampling rate is low, leading to considerable imprecision in discard estimates. The SARC noted this is particularly a problem when trip limits change on a frequent basis, as occurred in 1999. The number of sea sampling observations increased in recent years for the otter trawl fishery, but remains low. From 1997 through 1999, there were quarters with no otter trawl tows sampled. In 2000, tows were sampled in all quarters, with 110 tows sampled during the second quarter. Sink gillnet sampling declined in 1997, but has since increased. Sets have been sampled in every quarter since 1990. Gillnet sampling is still far below that observed from 1991 through 1993. There has not been any sampling of the shrimp trawl fleet since 1994. Recent (since 1999) and proposed increases in trip/possession limits should reduce discards of legal size fish. Recent increases in observer coverage may improve the precision of discard estimates for the otter trawl sector, but the lack of shrimp trawl estimates remains problematic. This will be a greater concern if the shrimp trawl fishery, which has been at a low level due to stock status, expands, as any discards are likely to be small groundfish that are not excluded by the Nordmore grate. Redfish rebuilding may also exacerbate this problem, as there is evidence that some legal sized redfish are not excluded by the Nordmore grate.

## Generic Advice to the NEFMC

In its 1999 report, the MSMC commented on the need for a more comprehensive approach to fishery management, particularly in the Gulf of Maine (MSMC 1999, pp 63-64). Noting that time-area closures which focus on Gulf of Maine cod are likely to result in a re-distribution of fishing effort towards other over-exploited stocks, the MSMC advised the NEFMC to consider the ramifications of management measures, implemented specifically for one stock, on the entire Northeast groundfish complex. In 2001, the MSMC re-iterates this concern. Fishing mortality rates inappropriate for rebuilding are still occurring on such spatially diverse stocks as Gulf of Maine cod, Georges Bank cod, American plaice, white hake, Cape Cod yellowtail, Southern New England yellowtail and Mid-Atlantic yellowtail flounder. All but a few stocks remain well below biomass targets.

As in 2000, the MSMC is advising on target TACs for the upcoming fishing year for 5 Amendment 7 stocks in the Northeast groundfish complex under both Amendment 7. Considerable latent effort and fleet capacity remains in the system, and predicting the efficacy of the indirect measures (e.g., trip limits, numerous area closures) relative to objectives (percent reduction in fishing mortality) is difficult. Given the magnitude of reductions needed to achieve Amendment 9 biomass targets, continuing reliance on indirect measures is likely to result in a repeat of the Gulf of Maine management scenario. This could include initial closures and trip limits, followed by annual adjustments that implement more closures and very restrictive trip limits (and their associated discard problems).

The outcome of the complex indirect measures implemented for Gulf of Maine is not only difficult to predict, but also difficult to measure. Insufficient at sea monitoring contributes to uncertainty in discard estimates. Reliance on restrictive trip limits without sufficient at sea monitoring will create similar situations elsewhere. Management measures which control fishing mortality in a direct manner can be evaluated with greater certainty than those currently in place.

The MSMC recommends further **reductions in overall fishing effort** and **fleet capacity** when the Council develops management measures for Amendment 13. The Council should develop systems to encourage choices that reduce fishing capacity and overall fishing effort.

## Specific recommendations

#### **Recreational fishing options**

The MSMC notes that recreational catch of Gulf of Maine cod increased to 1,147 metric in 2000, a 39% increase from 1999. The MSMC has recommended management measures for the recreational fishery. The MSMC recommends continual monitoring of recreational landings.

#### Haddock trip limit

#### **Georges Bank Haddock**

The trip limit for Georges Bank haddock is May 1- September 30: 3,000 pounds per day, 30,000 per trip; October 1-April 30: 5,000 per day, 50,000 per trip with allowance for Regional Administrator to the adjust trip limit to achieve 75% of the F0.1 TTAC. The MSMC notes that fishing mortality increased slightly to the Amendment 9 target with the liberalization of the haddock trip limit.

Although fishing mortality in 2000 (0.19) was below the  $F_{0.1}$  Amendment 7 objective (0.26), the Amendment 7  $F_{0.1}$  target is higher than the Amendment 9 F target (F=0.20). The MSMC recommends against implementing measures that will allow fishing mortality on Georges Bank haddock to increase above the Amendment 9 target (F=0.20). The MSMC notes that projected USA landings in 2002 associated with  $F_{status quo}$  (=0.19) are approximately 7,110 metric tons. Any management measure that allows for increases in fishing mortality above the Amendment 9 target should not be considered by the Council.

#### **Gulf of Maine haddock**

The current trip limit for haddock is not appropriate for the current biomass of Gulf of Maine haddock. The MSMC notes that landings for Gulf of Maine haddock increased in 2000 but remain below landings in 1998. The concern for Gulf of Maine haddock is twofold: 1) stock size is much smaller than Georges Bank haddock and 2) substantially greater proportion of the effort is on shorter duration trips. The MSMC recommends against eliminating the daily haddock trip limit because this could result in an increase in landings and exploitation. Landings and relative exploitation should continue to be monitored to ensure exploitation does not increase on Gulf of Maine haddock.

#### Access to closed areas

The improved status of Georges Bank yellowtail may create pressure to allow targeting of that species within current closed area. Information on fish distribution and bycatch in closed areas is based on limited sampling during narrow time periods. Information on the seasonal changes in the distribution of bycatch species is necessary before expanding any access program beyond the time-periods covered during previous programs when scallop vessels were granted access in closed areas (experimental scallop fisheries and scallop exemption programs). Any program that provides access to closed areas should begin conservatively, and include monitoring of both landings and bycatch of the target and other species (GB cod, GB winter flounder, windowpane, etc.).

The MSMC recommends that any program to allow vessel access to closed areas be done with sufficient monitoring of bycatch to ensure that fishing mortality does not increase on either the target species or bycatch species.

#### **General Recommendations**:

**Technological improvements** in the fishery that increase catch per unit effort could compromise management based on Days at Sea. Technological improvements that increase fishery

catch per unit effort will require more restrictive management measures to achieve and maintain mortality rates at or below rebuilding targets.

However, the MSMC **supports further experimentation of gear configuration** to improve size and species selectivity. Size-selectivity will become more important as stock biomass and recruitment improves. Current gear is capable of generating significant discards of sub-legal fish. Regulatory discarding will increase as recruitment improves, leading to loss of potential yield and revenue. Improvements in species selectivity may also prove useful for providing protection to a "weak stock" while simultaneously allowing exploitation on species with co-occurring distributions. Enhancing species selectivity in small mesh fishery may improve the likelihood of achieving certification as the large mesh regulated species' distribution expands and recruitment improves.

The MSMC **recommends that additional at-sea sampling be conducted** to improve the precision of discard estimates. This is especially important if the Council continues to rely on restrictive trip limits to achieve target fishing mortality rates.

Real time management measures such as in-season adjustments based on trigger mechanism requires real-time data. The present data collection system can not support this approach. Requiring technologies for vessel monitoring systems and real-time reporting (landings, stock area) will provide a better match between data collection and management/assessment needs.

# **Stock specific Advice and Recommendations**

## **Georges Bank cod**

#### C1. MSMC advice for Amendment 7

Fishing mortality is slightly above the A7 target. Fishing mortality should be reduced from 0.22 to 0.18. Although the current assessment suggests that SSB has increased since 1994 primarily due to growth of existing stock at relatively low mortality rates, current SSB is still well below Amendment 7 target and remains extremely low compared to historic biomass.

Continued poor recruitment reduces the potential for stock rebuilding at  $F_{0.1}$ . Reducing fishing mortality below  $F_{0.1}$  will avoid declines in SSB and enhance the probability of long-term rebuilding.

This assessment has a strong retrospective pattern that underestimates F and overestimates stock biomass in the terminal year. The suggested percentage reduction required to meet the target F calculated by comparing current F with reference F will not be sufficient to achieve target mortality if the retrospective pattern continues.

#### C2. Annual adjustment recommendations for meeting Amendment 7 objectives

Three MSMC management options recommend reducing used DAS by at least 10 to 20%. These options should meet the Amendment 7's target mortality for Georges Bank cod.

#### C3 MSMC advice for Amendment 13

The MSMC repeats it advice from last year's report.

"Fully recruited fishing mortality should not exceed 0.09 over the foreseeable future. This mortality rate is projected to achieve  $B_{msy}$  by 2004 and should not be exceeded until stock conditions improve (improved recruitment, broadened age structure, higher SSB)."

However, the current assessment indicates that biomass is growing more slowly than predicted by the 1999 MSMC long-term projection. The timeframe for rebuilding is longer than predicted by the long-term projection due in part to a retrospective pattern which impacts estimates of current biomass (noted in C1). The MSMC also notes that F was greater than the 0.09 used in the projection for 1999-2000. There is an increasing risk that rebuilding may not be accomplished before 2009 (see Figure 5.2.1.2).

#### C4. Transboundary considerations

Canada assesses the eastern portion of Georges Bank cod (5Zj,m) while the USA assessment covers the entire Bank (5Z) as the USA. Bilateral discussions with Canada will be necessary to

develop consistent rebuilding goals and strategy

## **Georges Bank haddock**

## C1. Amendment 7 advice

Fishing mortality is well below the Amendment 7 target and no reductions in fishing mortality are required. Spawning stock biomass has increased substantially in recent years and is projected to reach the Amendment 7 target (80,000 metric tons SSB) in 2001 with 50% probability.

### C2. Annual Adjustment recommendations for meeting A7 objectives

MSMC is not recommending any new management measures for Georges Bank haddock in 2001. However, the MSMC recommends maintaining current management measures in order to prevent fishing mortality from increasing above the Amendment 9 proxy  $F_{msy}$  target (=0.20 fully recruited).

#### C3. MSMC advice for Amendment 13

The Amendment 7 fishing mortality rate target ( $F_{0.1}$ = 0.26, fully recruited) is inappropriate for maintaining SSB<sub>MSY</sub>. Fishing mortality should be maintained at the Amendment 9 proxy target  $F_{msy}$  (=0.20).

#### C4. Transboundary considerations

Canada assesses the eastern component (5Zj,m) of the Georges Bank haddock stock while the USA assesses the entire Georges Bank (5Z). Bilateral discussions with Canada will be necessary to align rebuilding goals and strategies.

### **Georges Bank yellowtail**

#### C1. MSMC advice for Amendment 7

Fishing mortality is well below the Amendment 7 target and no reductions in fishing mortality are required. Spawning stock biomass is also above the Amendment 7 threshold. The stock has met its Amendment 7 goals. The MSMC recommends that F be allowed to increase at a moderate rate but not above  $F_{0.1}$  in order to improve yield.

#### C2. Annual Adjustment recommendations for meeting Amendment 7 objectives

MSMC is not recommending any new management measures specific for Georges Bank yellowtail in 2002.

#### C3. Amendment 13 advice

Current mean biomass is above the most current  $B_{msy}$  estimate. Given the instability of the  $B_{msy}$  estimate, the MSMC recommends that F be allowed to increase at a moderate rate but not above  $F_{0.1}$  (=0.25, fully recruited) until estimates of  $B_{msy}$  are more stable.  $F_{0.1}$  is in magnitude

similar to that  $F_{msmc}$  (0.27) recommended in MSMC 1999 that was expected to rebuild to  $B_{MSY}$  by 2009.

#### C4. Transboundary considerations

Canada assesses the same stock area (5Z) as the USA. Bilateral discussions with Canada will be necessary to develop consistent rebuilding goals and strategies.

## Southern New England yellowtail

#### C1. Amendment 7 advice

There is no evidence of a change in stock status for Southern New England yellowtail. Therefore, the MSMC has no basis to change its Amendment 7 advice from 2000. The 2000 MSMC Report gave the following advice:

"Fishing mortality is slightly above the Amendment 7 target. Fishing mortality should be reduced from 0.30 to 0.27. The difference between the projected current F and the target is not significant. Although the current assessment suggests that SSB has increased since 1994, current SSB is still well below Amendment 7 target and remains extremely low compared to historic biomass."

#### C 2. Annual Adjustment recommendations for meeting A7 objectives

The MSMC has no basis for changing recommendations given in the 2000 MSMC Report. The 2000 MSMC advice was:

"... MSMC is not recommending any changes to Framework 33 measures specific for Southern New England YT in 2001."

Although this advice is still valid for Amendment 7 goals, the MSMC notes that maintaining the Amendment 7 target ( $F_{0.1}$ ) will delay rebuilding to Amendment 9 biomass targets. The NEFMC should consider measures to lower current exploitation in order to reduce the recovery period for this stock.

#### C3. MSMC advice for Amendment 13

The MSMC has no basis to change its Amendment 13 advice from the 2000 MSMC Report. The MSMC recommends that fully recruited fishing mortality should be as close to zero as practicable for the foreseeable future. A long-term projection using F=0.0 suggested that Bmsy may be reached in 2009 with 72% probability. The MSMC notes that the groundfish PDT has explored other strategies with long-term projections. In all cases, rebuilding  $F_{targets}$  were much less than  $F_{0.1}$ 

## **Gulf of Maine cod**

### C1. Amendment 7 advice

Fishing mortality in 2000 is well in excess of the Amendment 7  $F_{max}$ . MSMC repeats the concern that  $F_{MAX}$  is an inappropriate rebuilding target for Gulf of Maine cod's current status and  $F_{0.1}$  is a more appropriate rebuilding target. Substantial reductions in fishing mortality are necessary to achieve either  $F_{max}$  or  $F_{0.1}$ . Protection of the above average 1998 yearclass will enhance spawning potential and rate of recovery of this stock. The 1998 yearclass will become fully recruited to the fishery in 2002.

## C2. Annual Adjustment recommendations for meeting A7 objectives:

The MSMC is recommending several options for achieving a reduction. The options contain variations on DAS reductions (10-65%), seasonal and year-round area closures, and mesh increases. The MSMC also recommends bag limits and seasonal area closures for party and charter vessels.

The MSMC recommends that measures taken to achieve the mortality reduction on Gulf of Maine cod do not direct effort onto other species that are in need of a large reduction in mortality or continued rebuilding in order to achieve Amendment 9's goals. These species are white hake, American Plaice, Cape Cod yellowtail, redfish, Gulf of Maine haddock, Georges Bank cod, Southern New England yellowtail, and Mid-Atlantic yellowtail.

## C3. Amendment 13 advice

Biomass is not sustainable at current mortality rates. Fully recruited fishing mortality should not exceed  $F_{0.1}$  until stock conditions improve (recruitment, broadened age structure, higher total biomass).  $F_{0.1}$  is projected to achieve the  $B_{msy}$  target by 2008. Protection of the above average 1998 yearclass will enhance spawning potential and rate of recovery of this stock. The 1998 yearclass will become fully recruited to the fishery in 2002.

#### White hake

#### C1. MSMC advice for Amendment 13

Biomass is at 20% of  $B_{MSY}$  and fishing mortality is well above the  $F_{MSY}$  threshold. Fishing mortality should be substantially reduced to achieve rebuilding. The 1998 yearclass is above average and can provide the basis for future rebuilding. Based on the partial recruitment vector estimated in SARC 28, the 1998 yearclass will be 50% recruited in 2001 and fully recruited in 2002. The 1998 yearclass should be protected to enhance spawning potential and rate of recovery of this stock. The Council should be careful that measures designed to protect Gulf of Maine cod do not increase effort to white hake.

Amendment 9's overfishing definitions need to be reconsidered in light of SARC 33 recommendations.

## **American Plaice**

#### C1. MSMC advice for Amendment 13.

Spawning stock biomass is below  $SSB_{MSY}$ . Fishing mortality is well above the Amendment 9  $F_{MSY}$  threshold (0.19) and over twice the  $F_{target}$  (0.11). Both the 1997 and 1998 yearclasses appear to be above average, allowing for rapid rebuilding under low fishing mortality rates. Fishing mortality should be reduced to the Amendment 9  $F_{MSY}$  threshold to end overfishing (39% reduction). The 1997 yearclass will recruit to the fishery in 2002 and the 1998 yearclass will be fully recruited in 2003. Protecting these yearclasses will enhance rebuilding. Reducing fishing mortality to  $F_{target}$  (65% reduction) will enhance the contribution of these good yearclasses to rebuilding. The NEFMC should be careful that measures designed to protect Gulf of Maine cod do not increase effort to American plaice.

## Witch Flounder

## C1. MSMC advice for Amendment 13.

The MSMC concludes that there is no indication of a substantial change in stock status. The mean biomass is likely to be near  $B_{msy}$  and fishing mortality is likely near  $F_{msy}$ . The advice given in the 2000 MSMC report remains valid. The 2000 MSMC concluded that

"Exploitation should not be allowed to increase on this stock to allow rebuilding of the age structure and maintain compliance with the Amendment 9 overfishing threshold. The MSMC notes that under  $F_{status quo}$  is assumed to remain at 0.24 (fully recruited) in 2000 and 2001, but  $F_{bio wgt}$  is projected to increase (0.15 in 2001) slightly above the  $F_{MSY}$  threshold. This is due as good yearclasses enter the exploited phase. This is considerably above the Target F of 0.09."

#### Georges Bank winter flounder

#### C1. MSMC advice for Amendment 13.

The three year moving average of the survey biomass index in 2000 is below the  $B_{msy}$  proxy (2.73 kgs/tow). The 2000 MSMC projected mean biomass to be 5,023 mts in 2000 at the 1999 status quo F. The MSMC has no evidence of a substantial change in stock status from last year. The MSMC notes that this assessment will be updated at SARC 34, which is scheduled for November 2001.

MSMC recommends that the Amendment 9 overfishing definition be revised to reflect the quantitative assessment that is now available.

## Southern New England-Mid Atlantic winter flounder

### C1. MSMC advice for Amendment 13.

Survey indices suggest that biomass has declined while landings have increased in recent years. The trends in four independent survey indices are inconsistent with the biomass increase predicted by the short-term and long-term projections. Relative exploitation appears to have a slight upward trend. Based on this new information, the MSMC has changed its advice from MSMC 2000. Fishing mortality should not be increased. Given the differences between the long-term and short-term biomass projections and survey indices, the MSMC recommends updating the Southern New England/ Mid-Atlantic winter flounder assessment

#### Reference points targets from the ASMFC FMP for SNE/ MA winter flounder

The ASMFC Fishery Management Plan for winter flounder uses  $F_{40\%}$  (= 0.20) as a rebuilding F target and  $F_{25\%}$  (=0.35) for an overfishing definition. Amendment 9's  $F_{msy}$  is above the ASMFC's overfishing definition. The Amendment 9  $F_{msy}$  target greatly exceeds the ASMFC's rebuilding F target. Last year, the MSMC concluded that  $F_{status quo}$  is above the  $F_{40\%}$  ASMFC's rebuilding target and is near the  $F_{25\%}$ . Evidence suggests that fishing mortality remains well above the  $F_{40\%}$  rebuilding target and is near the ASMFC's overfishing definition. The ASMFC is in the process of amending the FMP to allow fishing mortality targets and overfishing definitions consistent with NEFMC's definitions.

## **Cape Cod yellowtail**

#### C1. MSMC advice for Amendment 13

Biomass in 2001 is projected to be below the biomass threshold (3,050 mts mean biomass).  $F_{bio wgt}$  in 2000 is well above the Amendment 9  $F_{MSY}$  threshold and overfishing is occurring. Fishing mortality in 2000 is inappropriate for stock rebuilding and should be reduced to at least  $F_{MSMC}$  (fully recruited=0.40) which is below the Amendment 9  $F_{msy}$  target. This implies an 81% reduction in fully recruited fishing mortality.

The NEFMC should ensure that management measures designed to reduce mortality on GOM cod do not increase effort on Cape Cod yellowtail. For example, Cape Cod landings in May and June doubled between 1999 and 2000. The rapid increase in Cape Cod landings in 2000 suggests that the simultaneous May closures for Georges Bank cod and Gulf of Maine cod may have increased effort in Blocks 124 and 125 during this time. The impact of the May closures on Cape Cod yellowtail should be examined.

## Redfish

# C1. MSMC for Amendment 13

The MSMC concurs with the SARC 33 advice. SARC 33 advised that

"Given the longevity and slow growth of redfish, exploitation rates should remain very low to continue rebuilding of this stock, building on favorable 1992 and adjacent yearclasses. As the stock grows additional effort and discarding could increase, hampering recovery. Many of the fish from these yearclasses are reaching or exceeding the minimum landing size of 23 cm (9"), and retention of these year classes will increase in regulated fisheries. Increases in fishing effort in deeper water portions of the Gulf of Maine could be detrimental to the recovery of the stock."

The current Amendment 9 reference points need to be re-evaluated in light of SARC 33 results.