

**Report of the New England Fishery Management Council's
Multispecies Monitoring Committee**

December 1998

Executive Summary

The Multispecies Monitoring Committee (MSMC) updated landings for Georges Bank cod, Georges Bank haddock, Georges Bank yellowtail, Southern New England yellowtail and Gulf of Maine cod through December 1998. These landings were used along with January 1, 1998 population numbers from the 27th Stock Assessment Review Committee assessments to project fishing mortality rates and spawning stock biomass estimates through December 1998 for the five stocks.

Stock status has improved for the three Georges Bank stocks and Southern New England yellowtail. Calendar year 1998 fishing mortality rates are below the overfishing definitions for these stocks and below the more restrictive Amendment 7 targets for all but Georges Bank cod. The fishing mortality rate on Georges Bank cod increased slightly to 0.26 in calendar year 1998. Spawning stock biomass has increased for these stocks but, with the exception of Georges Bank yellowtail, remains below the Amendment 7 biomass goals. In general, recruitment (incoming year classes) is below the long-term average with the exception of Georges Bank yellowtail.

The status of Gulf of Maine cod has continued to deteriorate. The fishing mortality rate is projected to increase slightly to 0.82 in 1998, and remains well above both the overfishing definition ($F_{20\%}=0.37$) and the Amendment 7 mortality target ($F_{\text{Max}}=0.29$). Recruitment is at record low levels and spawning stock biomass is projected to decline in 1998 to the lowest level ever observed. Biomass is projected to decline below $\frac{1}{4} B_{\text{MSY}}$ in 1999. The proposed control law recommends zero fishing mortality when biomass is below $\frac{1}{4} B_{\text{MSY}}$. Given the SARC 27 management advice based on the stock condition, continued high fishing mortality rates, poor recent recruitment and decline in the survival ratios (recruit/ spawning stock biomass), the Amendment 7 **objective of F_{max} is no longer appropriate.**

The MSMC also examined the status of the other large mesh regulated species (white hake, pollock, redfish, American plaice, witch flounder, winter flounder, and windowpane flounder) through calendar year 1997 using research trawl survey indices, commercial landings and a relative exploitation index. Survey biomass is low for five stocks (white hake, pollock, American plaice, Southern New England winter flounder, and Southern New England windowpane) and low to medium for three stocks (witch flounder, Gulf of Maine/Georges Bank windowpane and medium for two stocks (Cape Cod yellowtail and redfish). Relative exploitation has declined for all species, except white hake and Southern New England winter flounder. Exploitation has remained remain flat for these species since 1991.

Target total allowable catches (TACs) were calculated for calendar year 1999 (January 1 1999 to December 31, 2000) based on MSMC projected stock sizes for January 1, 1999 and target fishing mortality rates. These target TACs are then assumed to be the target TACs for the fishing year (May 1, 1999 to April 30, 2000). The TACs assume that the 1998 Canadian quota for the three Georges Bank stocks will be carried over in 1999. The assumed Canadian quota was subtracted from the Total TACs for transboundary stocks to obtain the USA target TAC. Target

TACs are found in the Table 1.

Table 1. 1998 projected landings (calendar year) and TACs for 1998 and 1999 (calendar year applied to fishing year) in metric tons for the 5 major groundfish stocks.

<u>Stock</u>	<u>1998 TAC</u>	<u>1998 landings</u>	<u>Projected 1999 TAC</u>
Georges Bank cod	4700	6348	5354
Georges Bank haddock	4797	3394	5600
Georges Bank yellowtail	2145	1110	2725
SNE yellowtail	814	223	1115
Gulf of Maine cod (F_{MAX})	1783	4075	1340
Gulf of Maine cod ($F_{0.1}$)	1783	4075	782

The TAC (for F_{MAX}) for Gulf of Maine cod represents a 67% drop from projected 1998 landings.

The MSMC evaluated days-at-sea use in fishing years 1996 and 1997. Days-at-sea allocations greatly exceeded the actual usage in those years. In general, vessels with individual days-at-sea used 82% of their allocation while fleet category vessels used only 43% in fishing year 1997. Based on fishing year 1997 utilization rates, days-at-sea limits in 1997 are more constraining on individual vessels than fleet vessels. Utilization of DAS usage in 1998 is projected to be similar to utilization in 1997. The MSMC expects a 7.4% reduction in effort from fishing year 1998, based on the 1999 fishing year days-at-sea schedule, utilization rates, and the vessel buyout program. This reduction has no probability of achieving F_{max} goal for Gulf of Maine cod or the $F_{0.1}$ goal for Georges Bank cod

After accounting for the expected 7.4% reduction in DAS, fishing mortality needs to be reduced on Georges Bank cod (21.9%) and Gulf of Maine cod (56.2%) from the fishing year 1997/98 fishing mortality rates. The MSMC proposes various options consisting of days-at-sea reductions, Gulf of Maine trip limits, and Gulf of Maine area closures and combinations thereof for achieving Amendment 7 targets. Options 1, 2, 3 and 5 achieve $F_{0.1}$ for Gulf of Maine cod and options 4 and 5 achieve F_{max} for Gulf of Maine cod. Only options 1 and 5 achieve the $F_{0.1}$ for Georges Bank cod. Additional measures for Georges Bank cod will be needed if Options 2, 3, 4 or 6 are selected. The options are summarized below and discussed in more detail with examples as needed in Chapter 9.

Table 2. Current closures in the Gulf of Maine and closure Alternatives 1, 2 and 3. Closures replace current closures in Gulf of Maine.

Current closures in the Gulf of Maine	
Blocks	Months
124, 125	March
131, 132, 133	April
138, 139, 140	May
129, 145, 146, 147, 152	June
156 (Western Gulf of Maine closure)	Year-round

Closure Alternative # 1	
Blocks	Months
124, 125	October-April
131, 132, 133	April-June
129, 130	September-December
138, 139, 140	June
156 (Western Gulf of Maine closure)	Year-round

Closure Alternative # 2	
Blocks	Months
124, 125	October-April
128, 129, 130	September-December
132, 133	March – June
139, 140	May – June
156 (Western Gulf of Maine closure)	Year-round

Closure Alternative # 3	
Blocks	Months
125	April-May
133	April-June
139, 140	May-June
124, 127, 128, 129, 130, 131, 132	Year-round
156 (Western Gulf of Maine closure)	Year-round

Table 3. Summary of various MSMC options described in Chapter 9.

OPTION	DAS	AREA CLOSURES	GOM COD TRIP LIMIT (per day)	MSMC COMMENTS
1	Reduce 56% to 20,813 total (e.g. fleet: 22 DAS, individual: 77% from baseline)	current	current (400 lbs. on vessels not in GOM Cod Exemption Program.)	Achieves $F_{0.1}$ objective for GOM and GB cod
2	Count at 3-for-1 rate on vessels not in GOM Cod Exemption Program.	current	current (400 lbs. on vessels not in GOM Cod Ex. Prog.)	Achieves $F_{0.1}$ objective for GOM cod but not for GB cod
3	Status Quo	current	100 lbs. on vessels not in GOM Cod Ex. Prog.	Achieves $F_{0.1}$ objective for GOM cod but not for GB cod; this option is not recommended because of concerns about discards
4	Status Quo	Alternatives 1, 2 or 3	current (400 lbs. on vessels not in GOM Cod Ex. Prog.)	Achieves F_{MAX} for GOM cod but not the $F_{0.1}$ target for GB cod
5	reduce 22% to 37,078 total (e.g. fleet: 62 DAS, individual: 67% from baseline)	Alternatives 1, 2 or 3	600 lbs. on vessels not in GOM Cod Ex. Prog.	Achieves F_{MAX} for GOM cod and the $F_{0.1}$ target for GB cod
6	Count at 2-for-1 rate on vessels not in GOM Cod Exemption Program.	Alternatives 1, 2 or 3	500 lbs. on vessels not in GOM Cod Ex. Prog.	Achieves $F_{0.1}$ target for GOM cod but not for GB cod

Summary of pros and cons for MSMC Options 1 through 6.

An overall DAS reduction that applies to all limited access multispecies vessels, whether singly (Option 1) or in combination with other measures (Option 5), achieves the fishing mortality goals for all five stocks of concern, and reduces mortality on other regulated species. An overall DAS reduction affects all multispecies vessels and regions where multispecies fisheries occur. It also results in the lowest rate of discard mortality, and has lower administrative and enforcement costs in comparison to other management alternatives. However, because the level of required DAS reductions is driven by Gulf of Maine cod, DAS allocations could be below break-even levels for much the fleet and, in response, vessels would shift effort to other fisheries or become insolvent. Furthermore, severely reducing DAS may encourage adaptive changes in fishing technology and behavior that would mitigate its conservation impact.

Counting DAS at a higher rate for vessels fishing in the Gulf of Maine (3-for-1, Option 2, or 2-for-1, Option 6) shares many of the pros and cons of a general DAS reduction option stated above, except that the impacts will primarily affect vessels fishing in the Gulf of Maine. Also, in addition to increasing pressure on non-regulated species in the Gulf of Maine, these options would provide an incentive for those vessels capable of shifting to redirect their effort to Georges Bank stocks.

A Gulf of Maine cod trip limit reduction alone (Option 3) is area specific and could achieve the target mortality reductions needed for Gulf of Maine cod, but could cause significant discarding, both regulatory discards and high-grading. For this reason, the MSMC does not recommend adoption of Option 3. A trip limit reduction on cod may also increase pressure on other regulated species and on non-regulated species in the Gulf of Maine, as well as shift effort onto Georges Bank in order to maintain viable trip revenues.

Area closures protect species and habitat within the closure, but may cause increased fishing pressure on areas left open. The net impact of an area closure depends on the relative abundance of species outside the closure area and the amount of effort that is displaced. Combining area closures with trip limits and/or DAS reductions addresses the problems associated with the individual management strategies. For example, when combined with a trip limit, an area closure may forestall increased discards if the closed areas cover the grounds where highest cod catches occur. When combined with DAS reductions, the amount of effort displaced to open areas is reduced, increasing the potential net conservation benefit of the closure.

Options 1, 2 and 3 include current (status quo) area closures in combination with reduced DAS or GOM cod trip limits. Options 4, 5 and 6 include three options for expanding Gulf of Maine area closures in different combinations with trip limits and DAS allocations. The trip limit and DAS allocations remain at the status quo level in Option 4 (GOM cod trip limit of 400 pounds per day). The trip limit increases to 700 lbs in combination with counting DAS at 3-for 1 in the Gulf of

Maine in Option 2, increases to 600 pounds in Option 5 in combination with an overall DAS reduction of 22 percent from current levels, and increases to 500 pounds in Option 6 in combination with counting DAS at a rate of 2-for-1 in the Gulf of Maine. Because the area closures and trip limits are focused on Gulf of Maine cod, Options 4 and 6 which do not include overall DAS reductions, do not achieve the target for Georges Bank cod. Furthermore, Options 4 and 5 achieve the plan objective of F_{MAX} for Gulf of Maine cod, while Option 6 achieves a more conservative $F_{0.1}$ target.

The MSMC has included three area closure options for the Gulf of Maine, to help address the issues associated with the distribution of economic impacts of area closures. Section 8.0 of this report contains a description of the different options and an analysis of their conservation impacts. All options retain the current Western Gulf of Maine Closed Area (year-round). The options differ in the proportion of inshore and offshore areas closed and the duration of the closures. Since Gulf of Maine cod is caught predominantly in inshore grounds, options which include more offshore grounds also include closures of longer duration, including, in Option 6, year-round closure of seven 30-minute-square blocks.

Figure 1. Gulf of Maine divided into thirty minute squares used to described area closures alternatives.

