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New England Fishery Management Council
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John Pappalardo, *Chairman* | Paul J. Howard, *Executive Director*

MEMORANDUM

DATE: January 15, 2010 (corrected 1/21/2010)
TO: Groundfish Oversight Committee
FROM: Groundfish Plan Development Team (PDT)
SUBJECT: **PDT Conference Call, January 13, 2010**

1. Groundfish PDT members held a conference call to discuss alternative GB yellowtail flounder rebuilding strategies on January 13, 2010. Participating in the call were Tom Nies and Anne Hawkins (NEFMC), Tom Warren and Doug Christel (NMFS NERO), Eric Thunberg and Paul Nitschke (NMFS NEFSC), Steve Correia (Mass. DMF), and Kohl Kanwit (Maine DMR).

2. At the November 2009 Council meeting, the Council voted to reconsider the GB yellowtail flounder rebuilding strategy. The rationale for the change seems to be to allow for increased catches in order to facilitate coordinated management with Canada and to increase yields from a stock in improving condition. The suggested process to accomplish this is:

> January 2010: Consider narrowing alternative strategies for future consideration
> July 2010: TRAC assessment of GB yellowtail flounder
> August 2010: Update analysis of alternative strategies using new assessment information
> September 2010: Council selection of revised strategy
> November 2010: Final Council approval of strategy, framework document, ABCs
> December 2010: Document submission
> May 2011: Implementation

3. This stock was declared overfished in 2005 after the 2005 TRAC (see attached letter). The M-S Act requires that rebuilding periods "be as short as possible" after taking into account several factors. Measures were implemented by FW 42 to rebuild in 2006. Based on the NSGs in existence at the time, the maximum rebuilding period ends in 2016. FW 42 adopted the strategy to rebuild GB YTF by 2014 (an eight year rebuilding period) with "about" a 75 percent probability of success.

4. The rebuilding period can be revised by either changing the probability of success, changing the ending date, or a combination of both. The probability of success cannot be reduced below the median (50 percent), and the rebuilding period cannot be extended beyond 2016. Since 2006, the Council has selected a 75 percent probability of success for new groundfish rebuilding strategies. Using this as a precedent to narrow the possible strategies, Table 1 summarizes the options:

Table 1 – Potential GB yellowtail flounder rebuilding strategies

2014		2015		2016	
50%	75%	50%	75%	50%	75%
	Current				

5. The recent TRAC forwarded two assessments: one includes the Canadian survey in recent years where high values were observed (referred to as the "including" model), and the other excluded the survey in those years ("excluding"). Neither model was preferred. The including model estimates larger stock size. Evaluating options is complicated by the existence of two assessments. There is no way of knowing which assessment best represents current stock status, and no way to predict if one assessment will be preferred at some unknown time in the future. Successful rebuilding could be risked if it is assumed the including results are correct and the excluding results prove more accurate. Considerable yield is sacrificed if the excluding model is assumed correct and the including results prove more accurate. The problem can be summarized as choosing a rebuilding strategy (ending year and probability of success) that will achieve stock rebuilding while producing acceptable yields under either assessment model.

6. Using the two current assessments, projections were run to determine the rebuilding mortality and catch streams for the identified scenarios. Catch in 2010 was assumed to be 2,000 mt for all scenarios based on the U.S. ABC (1,200 mt) and the assumed Canadian TAC (756 mt, based on TMGC discussions). Different catch assumptions would change the results slightly; the 2010 catch assumption can be updated later if necessary. Fishing mortality at the end of the rebuilding period is assumed to be 75 percent of F_{MSY}. All strategies were based on fishing mortality described to only two significant digits, so in some cases the probability of success is slightly higher than the defined strategy. Results are shown in Table 2. Note that under the including model, fishing mortality is capped at 75 percent of $F_{MSY,}$ consistent with the ABC control rule. As a result, there is no difference between a median rebuilding probability and a 2015 or 2016 ending date when the including model is used. Under the excluding model it no longer appears the stock can rebuild by 2014 with a 75 percent probability (subject to the 2010 catch assumptions used in this projection).

Table 2 – Catch streams under various GB yellowtail flounder rebuilding strategies
(1) F is capped at 75% of F_{MSY} consistent with ABC control rule

Excluding Model						
	2014		2015		2016	
	50%	75%	50%	75%	50%	75%
2010	*2,000*	*2,000*	*2,000*	*2,000*	*2,000*	*2,000*
2011	2404	0	3748	1228	4394	2404
2012	2670	0	3985	1415	4574	2670
2013	3095	0	4490	1683	5079	3095
2014	6758	8000	5239	2050	5871	3692
2015	7342	8297	7007	8680	6633	4300
2016	7637	8342	7406	8699	7118	8652
2017	7837	8348	7682	8624	7476	8640
Total Catch	39,743	34,987	41,557	34,379	43,145	35,453
Freb	0.1	0	0.16	0.05	0.19	0.1
Prob(year)	0.5	0.686	0.526	0.751	0.547	0.749
SSB Median Year		2013		2014		2014
Catch Rank	3	5	2	6	1	4

Including Model						
	2014		2015		2016	
	50%	75%	50%	75%	50%	75%
2010	*2,000*	*2,000*	*2,000*	*2,000*	*2,000*	*2,000*
2011	6012	2454	6318	3789	6318	4439
2012	6005	2669	6261	3994	6261	4605
2013	6152	2915	6381	4260	6381	4855
2014	6855	8359	6740	4649	6740	5252
2015	7303	8443	7212	8507	7212	5725
2016	7635	8464	7568	8561	7568	8700
2017	7827	8407	7782	8487	7782	8616
Total Catch	49,789	43,711	50,262	44,247	50,262	44,192
Freb	0.18	0.07	0.19(1)	0.11	0.19(1)	0.13
Prob(year)	0.511	0.752	0.569	0.75	0.62	0.769
SSB Median Year		2012		2013	2013	2013
Catch Rank	3	6	1	4	1	5

7. An examination of the results helps narrow the possible options, at least with the assessment information currently in hand. First, several of the analyzed strategies result in similar catch streams. These are summarized in Table 3; scenarios that have similar catch stream are marked with the same arbitrarily assigned letter. Second, if the excluding assessment is correct, a strategy of rebuilding by 2015 with a 75 percent probability does not produce higher yields in 2011 and 2012 than the 2010 ABC. As a result, absent additional information about stock status or consideration of other factors, 2015/75% does not seem a reasonable alternative to address the problem as understood by the PDT. Third, the 2016/50% option leaves few alternatives for adjustment should rebuilding progress fall behind schedule. When these only factors are considered, the reasonable alternatives would seem to be those marked with a "P" in Table 4.

Table 3 – GB yellowtail flounder rebuilding strategies with similar catch streams

	2014		2015		2016	
	50%	75%	50%	75%	50%	75%
Excluding	A		C		B	A
Including		A	D	C	D	B

Table 4 – Reasonable alternative GB yellowtail flounder rebuilding strategies

2014		2015		2016	
50%	75%	50%	75%	50%	75%
P	Current	P			P

8. Of the three possible alternatives shown in Table 4, 2015/50% returns the highest catch stream under either assessment model.

9. The scenarios can also be evaluated for the highest ex-vessel revenue return. This simplified analysis only considered revenues from landing yellowtail flounder and did not consider possible impacts on the scallop fishery. The net present value (NPV) of the yellowtail flounder revenue streams are summarized Table 5; results are only shown for two discount rates to illustrate how that assumption affects the estimates. Table 6 ranks the different alternatives by NPV. Generally, median rebuilding strategies produce a higher NPV because of the increased landings early in the time period. These results are robust for all discount rates typically used for management plan analyses.

Table 5 – Range of net present value for alternative rebuilding strategies (millions of dollars)

		2014		2015		2016	
Assessment Model	**Discount Rate**	**50%**	**75%**	**50%**	**75%**	**50%**	**75%**
Excluding	1.01	$56.5	$49.4	$59.2	$48.6	$61.6	$50.3
	1.1	$38.8	$31.9	$41.7	$32.0	$43.9	$34.4
Including	1.01	$70.4	$61.3	$71.2	$62.2	$71.2	$62.2
	1.1	$50.6	$41.7	$51.3	$43.1	$51.3	$43.6

Table 6 – Ranking of net present value of GB yellowtail flounder rebuilding strategies

	2014		2015		2016	
	50%	75%	50%	75%	50%	75%
Excluding	3	5	2	6	1	4
Including	3	6	1	5	1	4

Tables 5 and 6 corrected 1/21/2010

10. The PDT considered narrowing the possible alternatives but decided not to do so at this time because there did not seem to be an objective basis for doing so. The stock will be assessed in July 2010 which will provide additional information on rebuilding progress and possibilities. That information may help narrow the reasonable alternatives for consideration.

Attachment: Pat Kurkul letter dated July 8, 2005

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
NORTHEAST REGION
One Blackburn Drive
Gloucester, MA 01930

JUL - 8 2005

Paul J. Howard
Executive Director
New England Fishery Management Council
50 Water Street
Newburyport, MA 01950

Dear Paul:

As you are aware, the Transboundary Resource Assessment Committee (TRAC) met from June 14-17, 2005, in St. Andrews, Canada, and conducted stock assessments for the transboundary stocks of Georges Bank (GB) cod, haddock, and yellowtail flounder. The shared stocks of GB cod and haddock in U.S. waters represent portions of the stocks of GB cod and haddock managed in the U.S. Exclusive Economic Zone under the Northeast (NE) Multispecies Fishery Management Plan (FMP). The shared stock of GB yellowtail flounder in U.S. waters represents the entire stock of GB yellowtail flounder managed by the FMP.

The results of those assessments are contained in the 2005 TRAC Status Reports. The results of the GB yellowtail flounder assessment, which was conducted using two different VPA models, suggest that spawning stock biomass ranged between 8,500 – 14,200 mt and the fishing mortality rate was between 1.17-1.75 in 2004. Regardless of the model, the status determination remains the same. The Amendment 13 status determination criteria for GB yellowtail flounder are 29,400 mt (biomass threshold; ½ Bmsy); and 0.25 (maximum fishing mortality rate; Fmsy).

Therefore, based on the above information, and pursuant to section 304(e)(2) of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), I am providing notification to the New England Fishery Management Council (Council) that, based upon the best available information, the GB yellowtail flounder stock is in an overfished condition and that overfishing is occurring. That is, the 2004 fishing mortality rate for this stock exceeds the specified maximum fishing mortality rate, and the 2004 biomass is below the specified biomass threshold. The Magnuson-Stevens Act requires that the Council must take action within 1 year of this notice to end overfishing, and conservation and management measures must be implemented to rebuild the stock in accordance with the National Standard Guidelines. I suggest that measures to address the condition of the GB yellowtail flounder stock be implemented through Framework Adjustment 42 to the FMP, scheduled for implementation on May 1, 2006, and look forward to working with you on this important matter.

Sincerely,

Patricia A. Kurkul
Regional Administrator

cc: TN (7/11)