



New England Fishery Management Council

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MEMORANDUM

DATE: November 7, 2006
TO: Council
FROM: Scallop Plan Development Team (PDT)
SUBJECT: **Preliminary projections for the scallop fishery in 2007**

Each year after the scallop survey is completed the data are finalized and added to the SAMS model to estimate scallop landings and biomass. The PDT reviewed the preliminary projections for the 2007 fishing year and the overall fishing mortality rate is estimated to be 0.26, above the 0.24 threshold for overfishing. Therefore, under status quo management measures implemented under Framework 18 for fishing year 2007, overfishing is projected to occur. Projections for the 2006 fishing year are still below the overfishing threshold, but that is in large part because about one third of the total scallop biomass is in the Elephant Trunk Area and that area is still closed to scallop fishing in 2006.

Projections in Framework 18 were made using survey and fishery information through 2004. When survey data for 2005 and 2006 and landings data from 2005 were added to the model, biomass was lower, and overall fishing mortality higher, than what had been projected under Framework 18. Several factors may have contributed to the overestimation of biomass and underestimation of mortality. The model projections in Framework 18 assumed future recruitment would follow similar patterns to the observed (past) recruitment time series. Over the past two years, recruitment in Georges Bank has been very poor, and only around average in the Mid-Atlantic, so the Framework 18 projection overestimated the actual recruitment. Additionally, the number of open area DAS allocated under FW18 (20,000 open area DAS) may not have been precautionary enough. The PDT never reached consensus on a number during the Framework 18 process but recommended nothing above 20,000. The 20,000 DAS option chosen by the Council in FW18 allowed for higher than optimal fishing mortality in open areas. Together with the decrease in recruitment, this has led to reduced open area biomass and catch rates. Moreover, the 20,000 DAS estimate was based on an assumption of only modest increases in effort in general category effort. It appears that general category effort may have been higher than assumed. In addition, the model uses an estimate of growth from a rate determined in the 1970s. More recent work suggests that the estimated growth rate for Georges Bank is relatively accurate, but the growth rate for the Mid-Atlantic is slower than the rate used in the model. Other possible contributors to the observed discrepancies include reduced meat weights due to the seasonal spawning cycle, and higher than estimated discard and natural mortality.

The PDT decided to draft this memo to the Council to make it aware of the updated projections for fishing year 2007 based on the most recent data available. These projections use the same assumptions as in FW18, and for this reason, the PDT feels that they may also be overoptimistic. Many of these questionable assumptions will be reviewed at the SARC process during spring 2007 and may be updated in time to use for Framework 19. The overall modeling framework was reviewed by the SSC, and found to be sound.

The PDT is concerned that overfishing is projected to occur in 2007 and discussed the types of measures that would be necessary to reduce fishing mortality below the overfishing threshold of $F=0.24$. For example, if the number of Elephant Trunk access area trips is reduced by one for limited access vessels (and general category trips are reduced from 1,360 to 1,154) and open area DAS are reduced by 5,518 (an amount equivalent to 10 DAS for full time limited access vessels) then the overall fishing mortality rate is estimated to be 0.23. This option is labeled as Alternative 1 in the following figures and tables. In addition, another option (Alternative 2) could be to reduce the number of Elephant Trunk trips to 3 for limited access vessels (and general category trips reduced to 865) with no reduction in open area DAS. This alternative reduces fishing mortality to 0.22 for the entire resource. Lastly, Alternative 3 is an option that was developed to set fishing mortality at the target of $F=0.2$. In order to achieve this fishing mortality rate the number of trips in ETA would need to be reduced to 3 (and general category trips reduced to 1,154) and the number of open area DAS would be reduced by about 13 DAS per full time limited access vessels. Keep in mind that in 2007 vessels are still allocated limited access in Nantucket Lightship and Closed Area I; these alternatives would not affect that aspect of the program. It should also be noted that there are no measures in the current plan that can directly reduce general category effort except for the total number of trips in each access area.

Table 1 – Summary of projections for calendar year 2007 under status quo (Framework 18 measures) and three scenarios the PDT discussed to reduce fishing mortality in 2007.

| | Status Quo FW18 | Alternative 1 (4 ETA trips + 10 fewer open area DAS) | Alternative 2 (3 ETA trips + no open area DAS) | Alternative 3 (measures to equal $F=0.2$: 3 ETA trips + 13 fewer open area DAS) |
|------------------------------------|---------------------------|--|---|--|
| 2007 Fishing mortality (all areas) | F=0.26 | F=0.23 | F=0.22 | F=0.20 |
| 2007 ETA Fishing mortality | F=0.22 | F=0.17 | F=0.13 | F=0.13 |
| Landings (all areas) | 70 million | 62 million | 61 million | 56 million |
| Landings (ETA only) | 24.7 million | 20 million | 15.4 million | 15.4 million |
| DAS (open and access area DAS) | 37,633 | 32,115 | 33,653 | 28,659 |
| Exploitable Biomass | 330 million | 340 million | 339 million | 347 million |
| Total Biomass | 391 million | 402 million | 402 million | 410 million |

All of the alternatives project lower landings in 2007 as compared to the status quo. The model also ran these separate scenarios for ten years into the future, assuming a fishing mortality target of 0.20 for all years starting in 2008. When fishing mortality is reduced in future years to equal $F=0.2$ landings and DAS are reduced substantially. Landings increase again at different rates depending on which alternative is used in 2007. Table 2 summarizes the projected fishing mortality, catch, total DAS (access and open areas), and biomass projections for all four alternatives from 2007 through 2017.

Table 2 – Summary of projected F, catch, total DAS and total biomass under the status quo (Framework 18 measures) as well as three alternatives for 2007 - 2017

| | STATUS QUO | | | | ALTERNATIVE 1 | | | | ALTERNATIVE 2 | | | | ALTERNATIVE 3 | | | |
|------|------------|----------------|-------|-------------------|---------------|-----------------|-------|-------------------|---------------|-----------------|-------|-------------------|---------------|-----------------|-------|-------------------|
| | F | Catch (mil lb) | DAS | Biomass (mil lb.) | F | Catch (mil lb.) | DAS | Biomass (mil lb.) | F | Catch (mil lb.) | DAS | Biomass (mil lb.) | F | Catch (mil lb.) | DAS | Biomass (mil lb.) |
| 2007 | 0.26 | 70.2 | 37633 | 391.4 | 0.23 | 62.0 | 32115 | 402.3 | 0.22 | 60.9 | 33653 | 401.6 | 0.20 | 55.7 | 28659 | 409.8 |
| 2008 | 0.20 | 52.8 | 23487 | 416.4 | 0.20 | 56.0 | 24673 | 424.9 | 0.20 | 55.8 | 24496 | 424.3 | 0.20 | 56.7 | 25146 | 432.3 |
| 2009 | 0.20 | 58.0 | 24870 | 435.7 | 0.20 | 60.6 | 25823 | 441.8 | 0.20 | 60.7 | 25736 | 441.0 | 0.20 | 61.7 | 26357 | 448.2 |
| 2010 | 0.20 | 62.7 | 25904 | 450.1 | 0.20 | 63.8 | 26271 | 455.0 | 0.20 | 64.2 | 26361 | 453.9 | 0.20 | 65.1 | 26756 | 459.8 |
| 2011 | 0.20 | 66.0 | 27296 | 459.9 | 0.20 | 66.1 | 27315 | 464.5 | 0.20 | 66.4 | 27392 | 463.2 | 0.20 | 67.9 | 27988 | 467.0 |
| 2012 | 0.20 | 66.6 | 27821 | 466.9 | 0.20 | 67.8 | 28360 | 469.9 | 0.20 | 67.4 | 28143 | 469.3 | 0.20 | 67.7 | 28185 | 472.3 |
| 2013 | 0.20 | 65.9 | 28002 | 472.9 | 0.20 | 66.0 | 28031 | 475.6 | 0.20 | 65.8 | 27922 | 475.4 | 0.20 | 67.0 | 28372 | 476.7 |
| 2014 | 0.20 | 67.6 | 28818 | 476.0 | 0.20 | 67.4 | 28720 | 478.7 | 0.20 | 67.4 | 28685 | 478.8 | 0.20 | 68.3 | 29089 | 478.8 |
| 2015 | 0.20 | 67.0 | 28721 | 481.0 | 0.20 | 67.6 | 28919 | 482.9 | 0.20 | 67.6 | 28911 | 483.0 | 0.20 | 67.6 | 28915 | 482.9 |
| 2016 | 0.20 | 63.8 | 27685 | 490.5 | 0.20 | 64.2 | 27830 | 491.7 | 0.20 | 64.3 | 27835 | 491.9 | 0.20 | 64.2 | 27827 | 491.7 |
| 2017 | 0.20 | 66.2 | 28569 | 495.8 | 0.20 | 66.5 | 28661 | 496.6 | 0.20 | 66.5 | 28672 | 496.8 | 0.20 | 66.5 | 28659 | 496.6 |

Figure 1 – Projection of scallop landings (catch in mt) under status quo (solid line) and three alternatives for 2007-2017 (dashed lines) [1 mt = 2204.6 pounds]

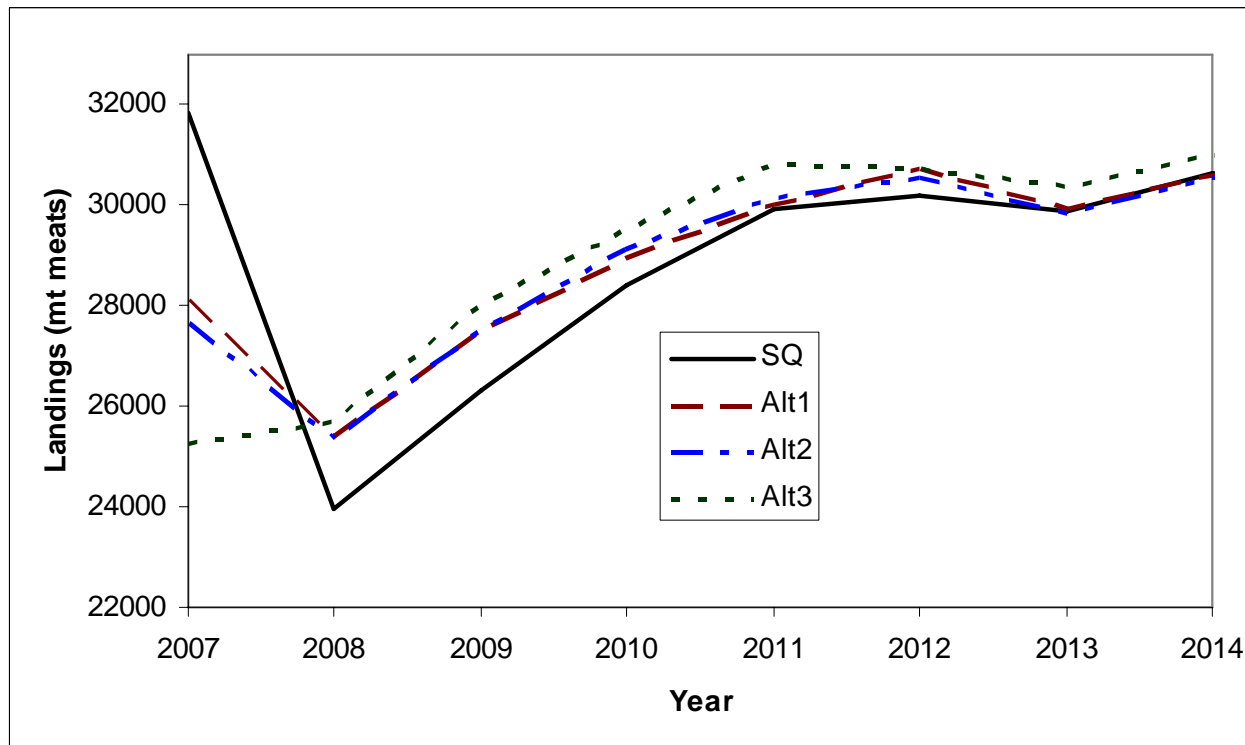


Figure 1 shows projected landings under all four scenarios from 2007 through 2017. If status quo measures are in place for 2007, fishing measures in 2008 will need to be cut back to 23,487 DAS to achieve $F=0.20$, estimating total landings of 52.8 million pounds. This is a 38 % reduction in DAS from 2007 and 25% reduction in landings from 2007 estimates. Future reductions in 2008 and beyond will also be necessary under each of the alternatives discussed for 2007, but they are not as strict. For example, if measures are put in place in 2007 to reduce fishing mortality to $F=0.23$ (Alternative 1), then in 2008 DAS will still need to be reduced to 24,674, but that level is higher than under the status quo (about 1,187 total DAS higher than under the status quo alternative). If fishing mortality stays at 0.20 in the future then landings will eventually increase over time under the status quo and other alternatives considered. It should be emphasized that these projections use the same assumptions as in FW18, and are likely overestimating biomass and landings, and underestimating fishing mortality. In particular, the PDT feels that under status quo/no action, overall fishing mortality in 2007 is more likely to be above the estimated F of 0.26 than below.

Other combinations could be considered to reduce fishing pressure, but the PDT believes a combination of reduced trips for the Elephant Trunk and open area DAS would be the most effective and straight forward approach. The projections do not suggest a large level of overfishing for 2007 ($F=0.26$), but the PDT supports consideration of reducing effort because if anything the model may be overestimating biomass, and reductions in 2007 will not require large sacrifices for the industry overall. Reductions in 2007 may reduce the boom and bust situation the scallop fishery may be facing, and help stabilize the fishery long term. Total landings in 2003 were 57 million, about 65 million in 2004, about 55 million in 2005, and as of September 2006 landing for this fishing year are about 42 million pounds. Framework 18 projected total landings for 2006 to be about 70 million.

So now what?

The Elephant Trunk Area is projected to open in January 2007 and there are no mechanisms under the Council process that could implement additional measures to prevent overfishing for FY2007. The triggers that would have supported notice action to reduce the number of trips in the Elephant Trunk Area were not met based on the updated projections from the three surveys of that area (*See Scallop PDT memo on ETA estimate Document #2 in the Council binder*). While the PDT highlighted a handful of reasons why precautionary measures should be considered for access in ETA, the triggers were not met based on the Notice Action procedure approved in Framework 18. If Interim Action is considered the PDT did discuss secondary measures that would be considered in addition to the primary mechanisms to reduce F (number of trips in ETA and open area DAS). For example, prevention of deckloading and measures to limit the number of trips taken in the earlier part of the year or delaying opening until March are possible strategies to further reduce mortality.

A Council action to consider measures for 2007 could not be implemented before March 1, 2007. Therefore, the Council should consider this information from the PDT and discuss if it warrants requesting the Service to consider interim action to prevent overfishing in 2007, or should the Council wait to address overfishing in Framework 19, which will set management measures for FY2008 and FY2009. The Council is expected to make final decisions on Framework 19 in September 2007, and the action would be submitted to NMFS soon after that.