



New England Fishery Management Council

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**To:** Tom Nies, Executive Director  
**From:** Scientific and Statistical Committee  
**Date:** August 22, 2016  
**Subject:** Overfishing levels (OFLs) and acceptable biological catch (ABC) recommendations for Georges Bank yellowtail flounder for fishing years 2017 and 2018.

The SSC met on August 10, 2016 in Boston, Massachusetts, to address the following term of reference (TOR):

Provide the OFL and an ABC for each year for fishing years 2017 and 2018 that will meet management objectives and prevent overfishing.

To address this TOR, the SSC considered the following information:

B.1 PDT presentation

B.2 Memo from PDT to SSC re GB yellowtail flounder ABCs (August 4, 2016)

B.3 Transboundary Resources Assessment Committee (TRAC) Status Report for GB yellowtail flounder (August 2016)

B.4 DRAFT TRAC Stock Assessment Report for GB yellowtail flounder for 2016 (July 2016)

B.5 2016-2017 SSC ABC and OFL recommendations for GB yellowtail flounder (September 8, 2015 Memo from SSC to Tom Nies)

Since the 2014 diagnostic benchmark assessment for Georges Bank yellowtail flounder, the stock has been assessed using an empirical approach based on the fishery-independent surveys conducted by DFO and NOAA (spring and fall), rather than an analytical model. This approach precludes formal estimation of reference points and status of the stock. Therefore, OFL for Georges Bank yellowtail flounder remains unknown.

The 2014 assessment recommended that ABC for the stock be set based on an exploitation rate ranging from 2% to 16% applied to the mean swept-area biomass estimate from the three surveys. The SSC accepted this recommendation in 2014, using the upper end of the range of exploitation rates, which resulted in a recommendation that ABC should not exceed 354 mt for FY2015.

In 2015, the SSC recommended that the status quo ABC of 354 mt should remain the upper limit for FY2016 because the biomass estimate had not changed substantially. Furthermore, despite endorsing the empirical approach as the best basis for developing catch advice, the SSC expressed concerns about the uncertainties inherent in the approach, including high variance and inconsistencies among the three surveys. The SSC concluded in our September 8, 2015 report that,

“...annual adjustments to the ABC are not warranted in the absence of evidence of substantial changes in biomass...” However, the SSC did not specify what would constitute a “substantial” change, although we did reiterate a suggestion from our August 29, 2014 report on Georges Bank yellowtail flounder that basing the ABC on the three-year moving average of biomass estimates might help to dampen both noise in the survey data and resulting inter-annual fluctuations in catch.

The 2016 TRAC assessment reports a larger change in the average biomass estimate from 2015 to 2016 (-32%) than the change from 2014 to 2015 (<1%). The Groundfish PDT recommended to the SSC that 245 mt, based on an exploitation rate of 16% applied to the average of the three survey-based biomass estimates (1,532 mt), should be considered an upper limit for the FY2017 ABC.

The SSC considered a recommendation that ABC should not exceed 245 mt, but ultimately decided to recommend that the status quo ABC of 354 mt be retained as the upper limit. The primary reason for this recommendation is similar to the SSC advice last year: The considerable uncertainties in survey-based estimates, especially high variability and inconsistencies among surveys, suggest that a one-year change might not reflect a meaningful change in the stock to which management needs to respond.

Uncertainties notwithstanding, given that the magnitude of change in the biomass estimate from 2015 to 2016 is more substantial than the change from 2014 to 2015, the SSC discussed in more detail some of the risk considerations accompanying our advice. In particular, we considered the likelihood that the advice will result in overfishing. This is a difficult question to answer given that OFL for the stock is unknown. However, OFL being unknown does not mean that OFL does not exist, and the challenge lies in determining whether an ABC recommendation is likely to be below the unknown OFL.

The SSC identified several factors that suggest the risks associated with status quo ABC might be low:

- Both catch limits and actual catches for Georges Bank yellowtail flounder have been the lowest on record, by far, in recent years.
- Actual catches have been well below the ABC for several years due to market factors, active avoidance by fishermen and other factors. This provides an additional layer of buffering against the risks of overfishing.
- Relative exploitation rates (catch divided by survey index) associated with recent catches are also by far the lowest on record, suggesting that the fishing mortality rate is also the lowest on record.
- Despite the drastic reduction in catch and very low relative exploitation rates, biomass has not shown a positive response, as indicated by the surveys, suggesting that environmental factors are having a strong effect delaying recovery.
- Although biomass has not shown a positive response, the proportion of fish in age classes 6+ is the highest observed in many years in the catch and the DFO survey. This is another indirect indication of low fishing mortality. Recovery of these older and more reproductively valuable fish, which has occurred under the status quo ABC, could be the precursor of a future biomass response. Comparable recovery of age structure has not been observed in the NOAA surveys.
- Because the TRAC assessment of Georges Bank yellowtail flounder is conducted annually, with catch specifications also adjusted annually, we expect that our advice that ABC should not exceed 354 mt will be revisited and potentially adjusted for FY2018.

It is important to reiterate the point from the SSC's September 8, 2015 report that if the ABC is set at the upper limit of 354 mt and if that full amount were to be caught, the risk profile may change. However, it is difficult to determine the scale of the change in risk. On the one hand, 354 mt would be proportionally much greater than catches from 2013-2015. On the other hand, 354 mt would remain considerably lower than any catches prior to 2013. Catch at that level would therefore maintain the dramatic reduction in removals achieved in recent years, albeit to a lesser degree. The SSC was not provided with any information to suggest that catches will increase dramatically in the near future, and are therefore likely to remain below ABC for the foreseeable future, but acknowledges the greater risks that would be faced if catch is closer to the ABC than it has been recently.

Finally, because the SSC was limited by the absence of clear metrics that would constitute "substantial" changes in the stock and trigger a change in the ABC, we have decided to form a sub-group that will develop a list of potential metrics and the pros and cons of each. These might include, but would not necessarily be limited to:

- A threshold (i.e., percentage) change in the average biomass estimate.
- Use of the three-year moving average of biomass estimates, rather than a single year estimate, with or without a threshold that would trigger a change.
- The trend in biomass estimates instead of or in addition to single year or multi-year estimates.
- Use of the 95% confidence interval or other measures of spread to determine whether inter-annual changes are significant and warrant a change.
- Changes in other relevant metrics beyond the biomass estimates and trends, e.g.:
  - Characteristics of the population structure (e.g., proportion of fish in older age classes).
  - Magnitude and trends in condition indices.
  - Changes in the ratio of catch:ABC.
  - Other biological, ecological or socio-economic indicators (e.g., price trends).

We will likely request time on the agenda at an upcoming SSC meeting to review the work of the sub-group and develop recommendations as appropriate. This process will be important in establishing greater transparency in future development of catch advice for the Georges Bank yellowtail flounder stock.

#### Summary of recommendations

- 1. ABC for the Georges Bank yellowtail flounder stock should not exceed 354 mt for FY2017 and FY2018, with the expectation that the FY2018 catch specifications will be revisited and possibly adjusted following the 2017 TRAC assessment. OFL for the stock remains unknown.**
- 2. An SSC sub-group should be formed to develop alternatives for quantitative metrics that would trigger an upward or downward adjustment of the ABC. We expect that the SSC will request time at an upcoming meeting to review the work of the sub-group and develop recommendations, as appropriate.**