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Proceedings of the Maritimes Region Science Peer Review on the Georges Bank Scallop Assessment

Compte rendu de l'examen par des pairs de la Région des Maritimes des évaluations du stock de pétoncles du banc Georges

May 5, 2011 | **Le 5 mai 2011**

Tara McIntyre
Meeting Chairperson

Tara McIntyre
Présidente de la réunion

Bedford Institute of Oceanography
1 Challenger Drive, P.O. Box 1006
Dartmouth, Nova Scotia
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July 2012 | **Juillet 2012**

Canada

Foreword

The purpose of these Proceedings is to document the activities and key discussions of the meeting. The Proceedings include research recommendations, uncertainties, and the rationale for decisions made by the meeting. Proceedings also document when data, analyses or interpretations were reviewed and rejected on scientific grounds, including the reason(s) for rejection. As such, interpretations and opinions presented in this report individually may be factually incorrect or misleading, but are included to record as faithfully as possible what was considered at the meeting. No statements are to be taken as reflecting the conclusions of the meeting unless they are clearly identified as such. Moreover, further review may result in a change of conclusions where additional information was identified as relevant to the topics being considered, but not available in the timeframe of the meeting. In the rare case when there are formal dissenting views, these are also archived as Annexes to the Proceedings.

Avant-propos

Le présent compte rendu a pour but de documenter les principales activités et discussions qui ont eu lieu au cours de la réunion. Il contient des recommandations sur les recherches à effectuer, traite des incertitudes et expose les motifs ayant mené à la prise de décisions pendant la réunion. En outre, il fait état de données, d'analyses ou d'interprétations passées en revue et rejetées pour des raisons scientifiques, en donnant la raison du rejet. Bien que les interprétations et les opinions contenues dans le présent rapport puissent être inexactes ou propres à induire en erreur, elles sont quand même reproduites aussi fidèlement que possible afin de refléter les échanges tenus au cours de la réunion. Ainsi, aucune partie de ce rapport ne doit être considérée en tant que reflet des conclusions de la réunion, à moins d'indication précise en ce sens. De plus, un examen ultérieur de la question pourrait entraîner des changements aux conclusions, notamment si l'information supplémentaire pertinente, non disponible au moment de la réunion, est fournie par la suite. Finalement, dans les rares cas où des opinions divergentes sont exprimées officiellement, celles-ci sont également consignées dans les annexes du compte rendu.

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SUMMARY

A Maritimes Science Advisory Process to update the assessment for Georges Bank scallop was held May 5, 2011, at the Bedford Institute of Oceanography in Dartmouth, Nova Scotia. Participants included Department of Fisheries and Oceans (DFO) Science Branch and Resource Management Division, the scallop fishing industry, aboriginal organization representative, and invited reviewers. The assessment and advice presented at this meeting will be used in the management of the Georges Bank 2011 scallop fishery.

SOMMAIRE

Un processus consultatif scientifique de la Région des Maritimes pour la mise à jour de l'évaluation du pétoncle au Banc Georges a été tenu le 5 mai 2011 à l'Institut océanographique de Bedford, à Dartmouth, en Nouvelle-Écosse. Parmi les participants, on a retrouvé des représentants de la Direction des sciences et de la Division de la gestion des ressources du ministère des Pêches et des Océans (MPO), ainsi que de l'industrie de la pêche du pétoncle, des organismes autochtones et des examinateurs invités. L'évaluation et les conseils issus de cette réunion seront appliqués à la gestion de la pêche du pétoncle sur le banc Georges en 2011.

INTRODUCTION

The Chair welcomed the participants to the 2011 Georges Bank scallop assessment. The Terms of Reference (Appendix 1) for the meeting were reviewed and the Chair outlined the objectives of the meeting as follows:

1. to assess the status of the resource;
2. to provide harvest advice for the 2011 fishery; and
3. to document the bycatch in the 2010 fishery.

It was pointed out that an assessment framework for the Georges Bank scallop stock was reviewed and accepted in February of 2009. This is the framework upon which the assessment of this meeting was based and, therefore, there was no Working Paper to be presented, just the advice to be provided in the Science Advisory Report (SAR).

The meeting participants (Appendix 2) introduced themselves in a round table and the Chair introduced David Hardie as the reviewer for the meeting and Brad Hubley as the Science lead for the assessment. The agenda (Appendix 3) was reviewed and agreed to by the meeting participants.

PRESENTATION OF SCIENCE ADVICE

Presenter: Brad Hubley
Rapporteur: Jessica Sameoto

Review of the Status of the Resource

The data inputs for the assessment were presented beginning with the fishery data. The removals over the time series from 1981-present along with the catch rate for the same time series was presented. However, the model was fit using only data from 1986-present due to a number of management measures which came in place in 1986 (see Jonsen et al., 2009). A change was made in how the fishery data is input to the model in that the start of the fishery year was changed to match the start of the survey, resulting in a September to August year. The reason for this is due to the assumptions in the model with respect to the relationship between the timing of the removals and the biomass index in the model. The model can be written so that the removals occur before or after the survey index, but not both. This approach was used in the Browns Bank scallop assessment and was more important in that case because the fishery on Browns Bank is not as consistent over time throughout the calendar year as it is on Georges Bank. However, it is still important to use this approach in this assessment because there is some temporal variation in fishing over time on Georges Bank.

The survey data was presented. Based on what was expected after the last assessment, a lower number of recruits were found during the survey. The data from 2008 showed a high recruitment pulse. However, not as many scallops moved out of the pre-recruit and recruit classes into the fully recruited size class. Condition factor was very low in 2009 and 2010, the lowest in the time series, and is certainly a factor in the lower number of fully recruited size class scallops in the 2010 survey. Meat weight is a function of condition factor and shell height. The observed average meat weight was lower in the past few years than expected. Shell growth has also been slower in 2010 than in previous high recruitment period. This may be affected by different factors than condition. Currently shell height frequencies must be relied on until age data is available. The growth data Science is currently calculating based on changes in shell height over time to estimate age shows a good fit to a Von Bertalanffy growth curve and

very similar to the standard parameters from Brown et al. (1972). It is expected to have real age data available for the next assessment.

Average percentage of clappers per standard tow is still low, less than 5%, but there are much higher proportions in areas on the northern portion of Georges Bank.

Model Results

The changes made to the modelling approach from the last assessment were the incorporation of the effect of interannual variability in condition on growth, an adjustment of the fishery data to survey year, and fitting the model beginning in 1986.

The predicted fully recruited biomass for 2011 shows an increase in biomass compared to the 2010 survey estimated biomass. Reviewing the prediction from last year's assessment using the survey biomass to see how good we are at predicting biomass, we see that we expected a big increase in biomass but only estimated a small increase in biomass from the 2010 survey. The difference was over 12,000 t. The estimate did, however, fall within the 80% confidence range of the predicted estimate. But we question why the prediction by the model was not closer to the estimated biomass. Was it mortality, growth?

A preliminary analysis was presented to determine why the prediction in biomass was off. The analysis is described below:

- The idea: Age 3 (75-95 mm) abundance in 2009 minus Age 4 (95-110 mm) abundance in 2010 minus the catch in between equals missing recruits.
- Grid survey polygon of Georges Bank 'a' into km2.
- Convert survey abundances to density (#/km2).
- Convert Catches to #/km2 using port sampling data.
- Calculate proportion of catch that comes from this year class.
    - Calculated by month then summed for the year.

The analysis suggests that there are 1.3 billion scallops missing from the 2.3 billion predicted. This suggests that the non-harvest mortality could be higher than 0.1 for recruits in 2010, possibly as high as 0.5. Work will continue with the model to address this issue. Current advice from this assessment will be precautionary tempered by last year's poor prediction.

Review of Decision Tables

The decision table presents a range of potential catches and the associated exploitation rate, probability of biomass decline, and the expected change in biomass. Three tables were presented to consider the change in condition seen in the past year, condition at the long term mean, and also incorporation of a higher mortality to address the possible missing recruits. For all three tables, at an exploitation rate around 25%, the expected change in biomass was still positive.

Discussion

Industry participants questioned the calculation of exploitation rate because the result was different than what they calculated. It was explained that the calculation was different than the basic calculation for exploitation – catch for the year from survey to survey divided by the sum of the biomass and the catch (same as numerator).

A discussion occurred about the possible effect that changing environmental factors may be having on growth and condition factor. Data processing is ongoing to be able to make better connections on this topic. Currently the existing satellite data is being compared to bottom condition data to determine if the satellite data could be used as a proxy for the sea bottom conditions. A suggestion was made that commercial vessels could aid in the collection of temperature data. It was also pointed out by an industry participant that there is a similar picture in the herring fishery with respect to the effect of changing environmental factors on fish condition.

A question was asked about how useful the information regarding the amount of clappers is when exploring the level of natural mortality. This data can be useful in tracking broad trends in mortality on an annual level. However, the data can be biased depending on the bottom type where the clappers are found. Rocky bottom can cause the shells to be broken up, whereas on soft, muddy bottom they can become embedded in the bottom and stuck together. It was noted that a similar trend in clappers has been observed on Brown's Bank North.

After the review of the decision tables and during the review of the SAR, further discussions arose regarding the suggestion of higher non-fishing mortality and whether or not this should be used in the model and the provision of advice. It was pointed out that the current level of natural mortality that is used, 0.1, is from older literature, so the question was asked now that there is a signal of a possible increase in natural mortality, when do you decide that you should change natural mortality in the model? Currently 0.1 is used across all size groups. The suggestion of a potentially higher value for M is based on a preliminary investigation and was only presented for the recruit size group. This work would have to be further explored and expanded to investigate over all size classes.

APPENDIX 1. Terms of Reference.

Georges Bank Scallop Assessment

Maritimes Region Science Advisory Process

5 May 2011
Dartmouth, Nova Scotia

Chairperson: Tara McIntyre

TERMS OF REFERENCE

Context

The status of Georges Bank scallop was last assessed in 2010. Harvest advice is requested on an annual basis by Fisheries Management (FM). The current assessment is requested by FM to provide harvest advice for 2011.

Objectives

- Provide harvest advice for the 2011 fishery using the 2009 assessment formulation.
- Estimate by-catch of yellowtail flounder, cod and haddock in the fishery since the last assessment.

Expected Publications

CSAS Science Advisory Report
CSAS Proceedings

Participants

DFO Science
DFO Fisheries Management
Nova Scotia Provincial Representatives
Fishing Industry

APPENDIX 2. List of Participants.

Name	Affiliation
Despres, Noel	Comeau's Sea Foods Limited
Glass, Amy	DFO Maritimes / PED
Greening, Linde	NS Fisheries and Aquaculture
Hardie, David	DFO Maritimes/PED
Hubley, Brad	DFO Maritimes / PED
Hurley, Peter	DFO Maritimes / PED
Knickle, David	Adams & Knickle Limited
McIntyre, Tara	DFO Maritimes / PED
Mosher, Jim	Clearwater Seafoods
Penney, Christine	Clearwater Seafoods
Reeves, Alan	DFO Maritimes / PED
Robert, Ginette	Seafood Producers Assn of NS (SPANS)
Sameoto, Jessica	DFO Maritimes / PED
Sarty, Matt	Clearwater Seafoods
Smith, Stephen	DFO Maritimes / PED
Stevens, Greg	DFO Maritimes / FAM
Stirling, Roger	Seafood Producers Assn of NS (SPANS)
Wentzell, Ian	APCFNC Secretariat

APPENDIX 3. Agenda.

Georges Bank Scallop Assessment
Maritimes Region Science Advisory Process

Van Steenburgh Boardroom, 427
Bedford Institute of Oceanography (BIO)
Dartmouth, Nova Scotia

Chairperson: Tara McIntyre

5 May 2011

DRAFT AGENDA

9:00 – 9:15	Welcome and Introduction (Chair)
9:15 – 9:45	Presentation of Georges Bank Scallop Assessment (B. Hubley)
9:45 – 10:00	Comments from Reviewers
10:15 – 10:30	Break
10:30 – 12:00	Discussion
12:00 – 1:00	Lunch (not provided)
1:00 – 2:30	Review of Science Advisory Report
2:30 – 2:45	Break
2:45 – 4:00	Review of Science Advisory Report (as needed)