Fisheries and Oceans Canada | Pêches et Océans Canada
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Canadian Science Advisory Secretariat (CSAS)

Proceedings Series 2015/023

Quebec Region

Proceedings of the Regional Peer Review on the Assessment of the Gulf of St. Lawrence (4RST) Greenland Halibut Stock

February 18, 2015
Mont-Joli, Quebec

Chairperson: Serge Gosselin
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December 2015

Canada

Foreword

The purpose of these Proceedings is to document the key activities and discussions of the meeting. The Proceedings may include research recommendations, uncertainties and the rationale for decisions made during the meeting. Proceedings may 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 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 appendices to the proceedings.

Published by:

Fisheries and Oceans Canada
Canadian Science Advisory Secretariat
200 Kent Street
Ottawa, ON K1A 0E6

http://www.dfo-mpo.gc.ca/csas-sccs/
csas-sccs@dfo-mpo.gc.ca

ISSN 1701-1280

Correct citation for this publication:

DFO. 2015. Proceedings of the Regional Peer Review on the Assessment of the Gulf of St. Lawrence (4RST) Greenland Halibut Stock; February 18, 2015. DFO Can. Sci. Advis. Sec., Proceed. Ser. 2015/023.

Aussi disponible en français:

MPO. 2015. Compte rendu de l'examen régional par des pairs sur l'évaluation du flétan du Groenland du golfe du Saint-Laurent (4RST); 18 février 2015. Secr. can. de consult. sci. du MPO, Compte rendu 2015/023.

SUMMARY

This document contains the proceedings from the meeting held within the regional assessment process of the Gulf of St. Lawrence Greenland Halibut (4RST). This review process was held on February 18, 2015 at the Maurice Lamontagne Institute in Mont-Joli. This meeting gathered more than thirty-five participants from science, industry and fisheries management. These proceedings contain the essential parts of the presentations and discussions held and relate the recommendations and conclusions that were presented during the review.

SOMMAIRE

Ce document renferme le compte rendu de la réunion tenue dans le cadre du processus régional d'évaluation du flétan du Groenland du golfe du Saint-Laurent (4RST). Cette revue, qui s'est déroulée le 18 février 2015 à l'Institut Maurice-Lamontagne à Mont-Joli, a réuni plus de trente-cinq participants des sciences, de l’industrie et de la gestion. Ce compte rendu contient l'essentiel des présentations et des discussions qui ont eu lieu pendant la réunion et fait état des recommandations et conclusions émises au moment de la revue.

INTRODUCTION

The Quebec Region of Department of Fisheries and Oceans (DFO) is responsible for assessing the stocks of several exploited fish and invertebrate species in the Estuary and Gulf of St. Lawrence. Most of these stocks are assessed periodically as part of a regional advisory process, which is conducted at the Maurice Lamontagne Institute in Mont-Joli. This document consists of the proceedings of the meeting held on February 18, 2015, on the assessment of the Gulf of St. Lawrence (4RST) Greenland Halibut stock.

The objective of the review was to determine whether any changes had occurred in the resource's status and whether adjustments were required to the management plans based on the chosen conservation approach, the ultimate goal being to provide scientific advice on managing the 4RST Greenland Halibut stock for the next two fishing seasons.

These proceedings report on the main points discussed in the presentations and deliberations stemming from the activities of the stock assessment regional committee. The regional review is a process open to all participants who are able to provide a critical outlook on the status of the evaluated resources. In this regard, participants from outside DFO are invited to take part in the committee's activities within the defined terms of reference for this review (Appendices 1 and 2). The proceedings also focus on recommendations made by meeting participants.

CONTEXT

Meeting chairperson Serge Gosselin welcomes the participants. He goes over the peer review's objectives and agenda. The participants around the table introduced themselves.

Mr. Hugo Bourdages, the biologist responsible for the Greenland Halibut assessment, points out the contributions made by the various collaborators and outlines the meeting plan and terms of reference. Mr. Bourdages provides an overview of the 4RST Greenland Halibut (Turbot) fishery, with 167 fishers from Quebec and 116 fishers from Newfoundland. The fishery is dominated by fixed gear vessels. Some points regarding turbot biology are described. The Gulf population is considered an isolated Northwest Atlantic stock. Ecosystem models highlight the trophic relationships (predator-prey) of the small and large turbot.

- Some participants note that a lot of mortality in the small Greenland Halibut is caused by things other than fishing (predation).
- In addition, the small Greenland Halibut depends greatly on its prey and its choices of prey are thus limited.
- The small redfish is an important prey for the large Greenland Halibut. The presence of large cohorts of small redfish in the pelagic zone, under the cold intermediate layer, could lead to displacement of halibut in the water column for feeding purposes, possibly making them harder to catch using fishing gear on the bottom.

The temperature conditions on the bottom of the Gulf of St. Lawrence are presented.

- The temperature at 200 m in the entire Gulf has never been as warm as it is now. This is a new record. Given that warm water enters the Gulf through the Cabot Strait, these conditions may persist in the coming years.

The data used in the assessment come from the commercial fishery and from surveys, namely, the DFO research survey and the mobile sentinel survey.

ASSESSMENT OF THE RESOURCE

COMMERCIAL FISHERY

Mr. Bourdages presents commercial fishery statistics and biological data from the commercial sampling program.

Greenland Halibut landings reached 2,753 t in 2013–2014 and 2,986 t (preliminary on December 31) in 2014–2015, out of an allocation of 3,751 t. The fishing season will last until May 14, 2015.

Landings and fishing effort have significantly dropped in northern Anticosti and Esquiman since 2012, but have increased in the western Gulf.

- There is a concern as to why the fishing effort has shifted towards the western Gulf (4T). The proximity of fishing sites and good catch rates could justify this shift in part.

The fishery's catches per unit effort (CPUE) decreased significantly across the Gulf in 2013. The CPUE for the western Gulf improved in 2014, though it continued to drop in northern Anticosti and Esquiman. Overall, the CPUE in 2014 is comparable to the average from 1999 to 2014.

Turbot bycatch by shrimpers is presented.

- Most tows contain some Greenland Halibut, but this bycatch accounts for less than 1% of the estimated population in the Gulf.
- The Nordmore grate ensures that large Greenland Halibut are not caught in shrimp trawlers.

RESEARCH SURVEY

Mr. Bourdages reviews the data from the DFO scientific survey and the mobile-gear sentinel survey.

Biomass indices from scientific surveys for fish over 40 cm rose in 2014 and were higher than average, though they had fallen in 2013. Fish from 30 to 40 cm, pre-recruits to the fishery, are low in abundance. The 2012 and 2013 cohorts are very strong and will become recruits to the fishery in 2018.

The condition index for fish over 30 cm rose in 2013 and 2014 and is higher than average. This rise could be explained by the arrival of new redfish cohorts in the Gulf, as they are an important prey for large Greenland Halibut.

- The trends in the abundance indices of both surveys are comparable.

The participants have no further comments about the surveys.

EXPLOITATION RATE

The exploitation rate (landings versus biomass) for each fishing area (western Gulf, northern Anticosti, Esquiman) and for 4RST is presented.

Locally, there was a decrease in catches, CPUE, and biomass in northern Anticosti and the head of the Esquiman Channel. These decreases could be explained by a combination of factors, such as increased exploitation rates from previous years and increased water temperatures on the bottom.

- It is suggested to use the term relative index of the exploitation rate.

- When catchability varies in the survey from one region to the next, can we speak about a comparable index between regions?
- Il est suggéré de parler d'un indice relatif du taux d'exploitation.

STATISTICAL CATCH AT LENGTH (SCALE) MODEL

The presentation made by Mr. Yvan Lambert dealt with the use of a statistical catch at length (SCALE) model as a tool for assessing the Greenland Halibut population in the Gulf of St. Lawrence. Mr. Lambert presents the data required by the model and the methods used for obtaining them, in particular mean length at age by sex. A comparison of observed vs. predicted values shows good agreement. A retrospective analysis is performed and projected values are obtained for 2015-2018.

The model seems to reflect the state of the population. It shows that there has been a slight decrease in exploitable biomass since 2010. The value observed in 2014 remains high compared to the average from 1990 to 2013. The arrival of the 2012 and 2013 cohorts should contribute to increased exploitable biomass starting in 2018.

- According to the model's diagnostic results, the best fit occurs with a natural mortality value of 0.3. This seems to be the most realistic value.
- Some participants say that one must keep in mind that the model tends to overestimate the number of fish (retrospective analysis). However, the information remains relative, and is not a problem as such.

PRECAUTIONARY APPROACH

The longest possible time series is used to determine the points of reference, that is, the biomass index for fish longer than 40 cm from the 1990-2014 DFO series. Mr. Bourdages briefly describes the approach with the two reference points (LRP and USR) and three stock status zones (Healthy, Cautious and Critical). The Limit Reference Point (LRP) must be determined by Science, while the Upper Stock Reference Point) (USR) is set by Fisheries Management. The LRP corresponds to the lowest population observed in the past, followed by a recovery, which is equivalent to 10,056 t.

- Note that this method for determining the LRP, while simple, has many good points.
- Some industry representatives hope that the USR will be determined shortly, and this seems to have been scheduled by Fisheries Management.

INTERIM YEARS

The abundance indices from surveys will be reviewed for the interim years.

There is a concern regarding critical thresholds that would lead to a Scientific advice reopening for the interim years. These thresholds are under study.

An industry member suggests using the fall commercial CPUE as an index for the interim years. However, we must ensure that these data are available in time.

CONCLUSION

RESEARCH

A list of completed, ongoing and future research activities is presented. Two future research projects are planned, namely using data from the Vessel Monitoring System (VMS) to assess interactions between turbot fishers and shrimpers, and continuing work on population dynamic models.

SUMMARY

The biologist presents the key findings of the assessment and the participants share their comments. Only comments about the contents (and not form) are reported.

- In the highlight on the condition index for fish longer than 30 cm, it is suggested that the link between the redfish be kept only if the Report provides more information on this topic. It must also be stated that his index rose in 2013 and 2014, and is above the average.
- The increase in exploitation rate and in bottom water temperature are kept as factors accounting for the decrease in catches, CPUE and biomass, but the increase in prey is discarded as a factor. This last factor will only be mentioned in the Report.
- As regards the highlight about the model, it should be pointed out that the small decrease in exploitable biomass has been observed since 2010. In addition, it is agreed that the arrival of the 2012 and 2013 cohorts should contribute to increased exploitable biomass starting in 2018.
- In the last highlight, it is suggested to replace the 3% reduction by a stability of the annual landings at 3,750 t. It should be mentioned that this data is obtained from the model.

The participants are in agreement about the following:

In the short term, there is likely to be a slight decrease in the abundance of commercial-sized fish, but in the medium term the forecast is more optimistic. The landings of the past 10 years have helped maintain a stable exploitation rate. The SCALE model projection indicates that exploitable biomass will remain stable with annual landings of 3,750 t for the next two seasons.

APPENDIX 1 – LIST OF PARTICIPANTS

Name	Affiliation
Bernier, Denis	DFO – Science
Bérubé, Isabelle	DFO – Science
Boucher, André	RPPNG
Bourdages, Hugo	DFO – Science
Brassard, Claude	DFO – Science
Brulotte, Sylvie	DFO – Science
Butruille, Frédéric	DFO – Fisheries Management
Castonguay, Martin	DFO – Science
Chabot, Denis	DFO – Science
Coffin, David	DFO – Fisheries Management
Cotton, Dan	ACPG
Cyr, Charley	DFO – Science
Denis, Marcel	ACPG
Desgagnés, Mathieu	DFO – Science
Dubé, Pierre	RHMCN
Dubé, Sonia	DFO – Science
Duplisea, Daniel	DFO – Science
Dupuis, Mario	OPFGQ
Gauthier, Johanne	DFO – Science
Gosselin, Serge	DFO – Science
Hurtubise, Sylvain	DFO – Science
Lambert, Yvan	DFO – Science
Légaré, Benoît	DFO – Science
Lubar, John	DFO – Fisheries Management
Marquis, Marie-Claude	DFO – Science
Morneau, Renée	DFO – Science
Plourde, Stéphane	DFO – Science
Roy, François	DFO – Science
Sainte-Marie, Bernard	DFO – Science
Sandt-Duguay, Emmanuel	MMAFMA/GMRC
Savenkoff, Claude	DFO – Science
Schwab, Philippe	DFO – Science
Spingle, Jason	FFAW
Thiboutot, Chantale	DFO – Fisheries Management
Trottier, Steve	DFO – Science
Vallée, Daniel	RPPNG
Vanier, Caroline	DFO – Science

APPENDIX 2 – TERMS OF REFERENCE

Assessment of the Gulf of St. Lawrence (4RST) Greenland Halibut

Regional Peer Review – Quebec Region

February 18, 2015
Mont-Joli, Quebec

Chairperson: Serge Gosselin

Context

The Gulf of St. Lawrence (4RST) Greenland halibut (also called black turbot, or more commonly turbot) fishery is now dominated by boats equipped with gillnets, whose home ports are located in Quebec or on the west coast of Newfoundland. In order to protect the population's reproductive potential, this fishery is subject to several management measures including the control of catches by a total allowable catches (TAC).

At the request of the fisheries management Branch, resource assessment is done every two years. The purpose of the review is to determine whether changes have occurred in the status of the resource that would justify adjustments to the management plan based on the retained conservation approach.

Objectives

Provide scientific advice on Greenland halibut stock status in NAFO Divisions 4RST. This advice shall include:

- Description of the biology of Greenland Halibut and its distribution;
- A summary of oceanographic conditions in the Gulf;
- Analysis of the commercial fishing data including landings, fishing effort, catch per unit effort, biological data and Greenland Halibut by-catches in other fisheries;
- Analysis of data from the DFO annual research trawl survey in August and mobile sentinel fisheries;
- Analysis of the Statistical Catch at Length (SCALE) model as a potential tool for assessing the Greenland Halibut population;
- Analysis of fishing effort distribution according to Greenland Halibut abundance distribution;
- Identification of reference points consistent with the precautionary approach;
- Perspectives for 2015 and 2016 based on available indicators;
- Identification of monitoring indicators of the stock status during the interim years;
- Identification and priorization of research projects to be considered for the future.

Expected publications

- Science Advisory Report on the Greenland Halibut in the Gulf of St. Lawrence (4RST)
- Research document
- Proceedings containing a summary of discussions

Participation

- Fisheries and Oceans Canada (DFO) (Science and Fisheries Management sectors)
- Fishing industry
- Provincial representatives
- Aboriginal communities/organizations
- External experts