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Northwest Atlantic Fisheries Organization

Report of the Working Group on Greenland Halibut Management Strategy Evaluation (WGMSE)

7 September 2011
via WebEx teleconference

NAFO
Dartmouth, N.S., Canada
2011

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1. Opening

The Co-Chair, Sylvie Lapointe (Canada) opened the meeting at 1315 UTC on Wednesday, 7 September 2011 and welcomed the participants (Annex1).

2. Appointment of Rapporteur

Ricardo Federizon (NAFO Secretariat) was appointed Rapporteur.

3. Adoption of Agenda

The provisional agenda as previously circulated was adopted (Annex 2). The Chair indicated that the Chair's discussion paper, which was previously circulated, would serve as the basis of the development of "Exceptional Circumstances" guidelines, the substantive agenda item of this meeting (item 5).

4. Review of the latest Scientific Advice on Greenland Halibut Management Strategy Evaluation

At the 2010 Annual Meeting, the Fisheries Commission (FC) requested to the Scientific Council (SC) the computation of Greenland halibut TAC in the context of the adopted MSE. It also requested guidance on what constitutes "exceptional circumstances" and guidance on conditions this provision should be applied.

In June 2011, the SC responded to the FC request. The SC Chair, Ricardo Alpoim presented the response. The FC request and the SC response are compiled in FCWG-MSE Working Paper 11/1 (Annex 3).

Recalling that in its advice, SC highlighted that its current evaluation of whether or not the exceptional circumstances provision should be applied was limited to comparisons made with the XSA OMs; it was noted that in order to have a high degree of confidence that the assumptions for the MSE are holding then future assessments should include SCAA OMs.

While SC advice on whether or not the exceptional circumstances provision should be applied was presented, it was noted that this discussion was beyond the mandate of the working group and should be considered by FC at the Annual Meeting.

5. Development of guidelines on how to address exceptional circumstances as a scientific justification for over-riding the TAC provided by the HCR.

The "Exceptional Circumstances Protocol" was developed (Annex 4).

6. Recommendations to be forwarded to the Fisheries Commission

It was agreed that the Exceptional Circumstances Protocol (Annex 4) would be forwarded to the Fisheries Commission with a recommendation for adoption.

7. Other Business

The SC Chair drew attention to concerns of the Scientific Council at its June 2011 Meeting: "Scientific Council expressed some concerns with the role of Fisheries Commission Working Groups which require scientific input. In principle Scientific Council supports the increase of dialogue between scientists, managers and fishers, but notes the increased workload this places on scientists and feels that any new science should be peer reviewed by Scientific Council before consideration by managers. If it is felt that Scientific Council lacks the experience to address a particular issue, it is within the remit of Contracting Parties to support the work of Scientific Council by adding additional members with the required skills and knowledge to their delegations."

The Co-Chair also reminded the working group that in the subsequent WG meetings, only working papers and documents originating from Contracting Parties, that represent the Contracting Parties' views or peer-reviewed by the Scientific Council would be considered.

8. Adoption of Report

This report was adopted through correspondence after the meeting.

9. Adjournment

The meeting was adjourned at 1515 UTC.

Annex 1. List of Participants

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Annex 2. Agenda

1. Opening
2. Appointment of Rapporteur
3. Adoption of Agenda
4. Review of the latest Scientific Advice on Greenland Halibut Management Strategy Evaluation
5. Development of guidelines on how to address exceptional circumstances as a scientific justification for over-riding the TAC provided by the Harvest Control Rule (HCR)
6. Recommendations to be forwarded to the Fisheries Commission
7. Other Business
8. Adoption of Report
9. Adjournment

Annex 3. FC Request and SC Response

(FCWG-MSE Working Paper 11/1)

FC Request (item 6 of FC Doc. 10/9 Rev.)

6. The Fisheries Commission adopted in 2010 an MSE approach for Greenland halibut stock in Subarea 2 + Division 3KLMNO (FC Working Paper 10/7). This approach considers a survey based harvest control rule (HCR) to set a TAC for this stock on an annual basis for the next four year period. The Fisheries Commission requests the Scientific Council to:

a) annually monitor and update the survey slope and to compute the TAC according to HCR adopted by the Fisheries Commission according to Annex 1 of FC Working Paper 10/7.

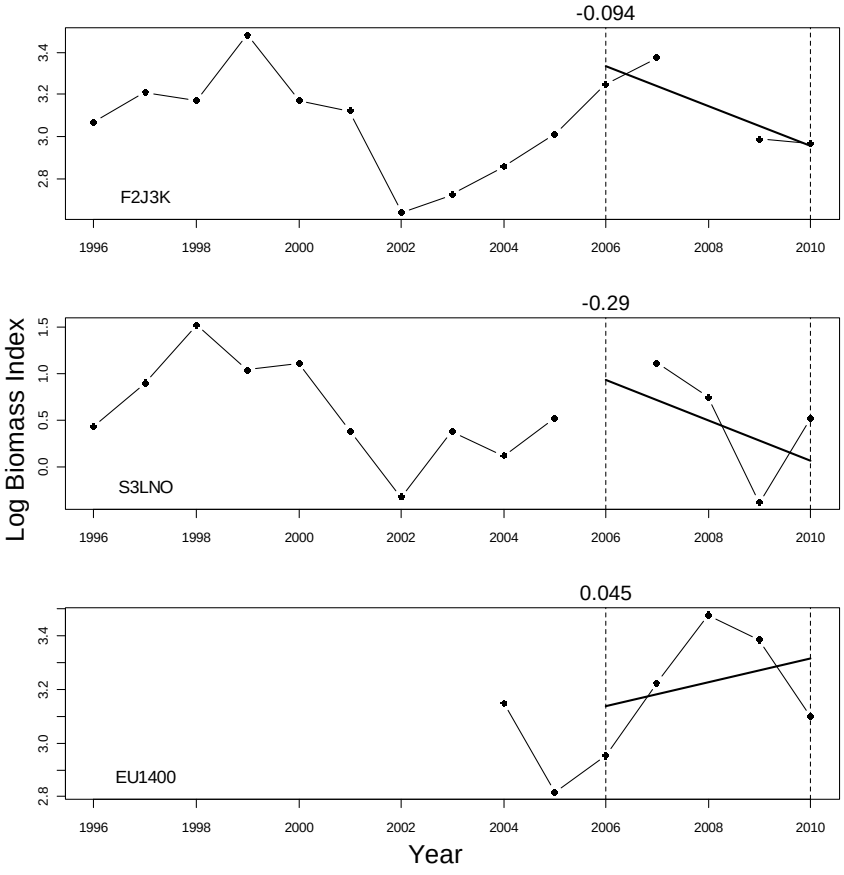
b) provide guidance on what constitutes "exceptional circumstances".

c) provide advice on whether or not the "exceptional circumstances" provision should be applied.

SC Response (SCS Doc. 11/16, p. 29-31)

a) *annually monitor and update the survey slope and to compute the TAC according to HCR adopted by the Fisheries Commission according to Annex 1 of FC Working Paper 10/7.*

Survey slopes were computed over the most recent five years (2006-2010) and are illustrated below. The data series included in the HCR computation are the Canadian Autumn Div. 2J3K index ("F2J3K"), the Canadian Spring Div. 3LNO index ("S3LNO"), and the EU Flemish Cap index covering depths from 0-1400m ("EU1400"). Averaging the individual survey slopes yields *slope*= -0.1130. Therefore, 17185*[1+2*(-0.1130)] = 13 301 t. However, as this change exceeds 5%, the HCR constraint is activated and TAC_{2012} = 0.95*17185=16 326 t.



b) *provide guidance on what constitutes "exceptional circumstances"*.

The HCR adopted by Fisheries Commission was tested during September 2010 under a suite of operating models (conditioned using XSA or SCAA) and found to be robust. Exceptional circumstances may generally be defined as any event or observation which is outside of the range of possibilities included within the MSE.
Some examples which could constitute exceptional circumstances in the Greenland halibut application may include catches outside the range tested in the MSE, or, differences between simulated and observed surveys.

c) *provide advice on whether or not the "exceptional circumstances" provision should be applied.*
At present, Scientific Council does not have the distributions of simulated survey indices, fishing mortality or biomass available to determine if the present status of resource is consistent with all operating models (OMs) on which the HCR was tested.

Comparisons were made between updated assessment results and XSA OMs; and the 2011 age 5-9 biomass from the updated XSA assessment is within the 5^{th} and 95^{th} percentiles of simulated biomass for all XSA OMs.
Given that exceptional circumstances have yet to be defined, determination of whether of not they are occurring is not possible. Further, extensive analysis by Scientific Council and/or decisions by Fisheries Commission may be required to determine whether or not the degree of differences between MSE assumptions/results and ongoing data collection are "exceptional enough" to warrant ignoring the HCR generated TAC in favour of other measures.
Specific to the Greenland halibut application, Scientific Council noted:

Catch over-run. The assumed catches in 2010 applied in all simulation testing during WGMSE were based on the TAC over-runs over the period 2004-2009 and ranged from 19.5 Kt to 23.2 Kt, with a median simulated catch 2010 of 20.7 Kt. However, the STACFIS estimate of catch for 2010 is 26.2 Kt, which is 26% higher than the median catch applied in simulation testing. Scientific Council notes that the estimated catch for 2010 exceeds the range included in WGMSE evaluations, and the degree of difference between MSE assumptions and current catch estimates may constitute an Exceptional Circumstance.

In addition, WGMSE evaluations assumed that in all years subsequent to 2010, removals would exactly equal the TAC generated from the HCR. That is, there is no allowance for TAC over-runs. Continued catch over-runs would increase the probability that updated assessments will differ from the distribution of results from the set of OMs considered during WGMSE.

Differences between simulated and observed surveys. If the observed surveys in the coming years fall outside the range of simulated surveys in the MSE, this may constitute an Exceptional Circumstance.

Annex 4. Exceptional Circumstances Protocol

(FCWG-MSE Working Paper 11/2, Revised)

1. Background:

Fisheries Commission (FC) adopted in 2010 a new Management Strategy (MS) for the Greenland halibut stock in Subarea 2 + Divisions 3KLMNO. This MS is applied annually to automatically adjust the TAC based on the recent trend in the survey biomass.

Exceptional Circumstances provisions are intended to respond to an event or observation which is outside of the range of possibilities considered within the MSE. In such cases, Fisheries Commission may have reason to over-ride the TAC provided by the MS and/ or also require the MS to be reviewed/ revised. To this effect, Scientific Council (SC) will annually monitor the situation and provide advice to Fisheries Commission on whether or not 'exceptional circumstances' may be occurring.

2. Exceptional Circumstances

Some examples, identified by the Scientific Council, which could constitute exceptional circumstances in the Greenland halibut application may include catches in excess of the range tested or observed surveys outside the range simulated. The range of catches and the survey indices are the only information that allow a direct comparison of observed data with modeled results. These should therefore be considered at a primary level. Other indicators should be considered at a secondary level of importance.

- Data Gaps - Incomplete/Missing survey data or termination of a survey time series;
- Biological Parameters - Biological inputs which differ from the range of possibilities included within the MSE (e.g. natural mortality);
- Recruitment - Estimated recruitments in the assessment no longer appear to be consistent with the range of recruitments considered in the MSE, where the same model is used for the estimation as used in the MSE; and /or
- Fishing Mortality –Estimates of fishing mortality that are outside the range of values generated in the MSE, where the same model is used for the estimation as used in the MSE; and/or
- Exploitable Biomass –Estimates of Exploitable Biomass that are outside the range of values generated in the MSE, where the same model is used for the estimation as used in the MSE.

Ongoing Scientific Council analysis related to this stock may also identify other situations which warrant consideration as exceptional circumstances.

The 90% probability intervals obtained from the projection from the MSE process should be considered as a reference.

Advice provided by Scientific Council which suggests the occurrence of exceptional circumstances should be based on compelling evidence and should include sufficient detail to allow FC to take an informed decision on implementation of the MS and possible next steps.

3. Implementation/ Next Steps

When SC advice indicates that exceptional circumstances may be occurring, FC will consider a range of responses/ possible courses of action taking into account the degree and type of circumstance noted. In order, those that would be considered are as follows:

1. Review the information, but maintain the MS as the management tool; additional research/monitoring may be recommended to determine if the signal detected warrants moving to step 2;
2. Advance the review period (currently 2014), and potentially revise the MS, but implement the MS outputs;
3. Set a catch limit that departs from the MS, and revise the MS.