NOT TO BE CITED WITHOUT PRIOR
REFERENCE TO THE SECRETARIAT

Northwest Atlantic Fisheries Organization

Serial No. N5031 NAFO/FC Doc. 04/7

26TH ANNUAL MEETING – SEPTEMBER 2004

Fisheries Commission's Request for Scientific Advice on Management in 2006 of Certain Stocks in Subareas 2, 3 and 4

1. The Fisheries Commission with the concurrence of the Coastal State as regards the stocks below which occur within its jurisdiction, requests that the Scientific Council, at a meeting in advance of the 2005 Annual Meeting, provide advice on the scientific basis for the management of the following fish and invertebrate stocks or groups of stocks in 2006:

   Shrimp (Div. 3M, 3LNO)
   Greenland halibut (Subarea 2 and Div. 3KLMNO)

2. The Fisheries Commission with the concurrence of the Coastal State as regards shrimp in Div. 3LNO requests Scientific Council, at its meeting of November, 2004 in review of the most recent data to provide advice concerning the scope for an adjustment to the TAC for 2005 from the currently advised level of 13,000 t.

3. The Fisheries Commission with the concurrence of the Coastal State as regards the stocks below which occur within its jurisdiction, requests that the Scientific Council, at a meeting in advance of the 2005 Annual Meeting, provide advice on the scientific basis for the management of the following fish stocks on an alternating year basis:

   Cod (Div. 3NO; Div. 3M)
   Redfish (Div. 3M; Div. 3LN; Div. 3O)
   Yellowtail flounder (Div. 3LNO)
   American plaice (Div. 3LNO; Div. 3M)
   Witch flounder (Div. 2J3KL; Div. 3NO)
   Skates (Div. 3LNO)
   Capelin (Div. 3NO)
   Northern Shortfin Squid (Subareas 3 and 4)

   - In 2004, advice was provided for 2005 and 2006 for cod in 3M, American plaice in 3M, yellowtail flounder in 3LNO, witch flounder in 3NO and northern shortfin squid in SA 3&4. These stocks will next be assessed in 2006.

   - In 2005, advice will be provided for 2006 and 2007 for cod in 3NO, American plaice in 3LNO, witch flounder in 2J3KL, redfish in 3M, redfish in 3LN, redfish in 3O and capelin in 3NO. These stocks will next be assessed in 2007. For redfish in Div. 3O the Scientific Council is requested to also provide its advice in the context of the 3-year management plan.

   The Fisheries Commission requests the Scientific Council to continue to monitor the status of all these stocks annually and, should a significant change be observed in stock status (e.g. from surveys) or in by-catches in other fisheries, provide updated advice as appropriate.

4. The Fisheries Commission with the concurrence of the Coastal State requests Scientific Council, at a meeting in advance of the 2005 Annual Meeting, to provide advice on the scientific basis for the management of white hake in Div. 3NO including recommendations regarding the most appropriate TAC for 2006 and 2007 in the context of the 3-year management plan. This stock will be assessed in alternate years thereafter.

5. The Fisheries Commission with the concurrence of the Coastal State requests Scientific Council, at a meeting in advance of the 2005 Annual Meeting, to provide information on the status of the Greenland halibut in SA 2+ Div. 3KLMNO in relation to the Rebuilding Strategy including commentary on progress in relation to targets described in the Strategy.

6. The Commission and the Coastal State request the Scientific Council to consider the following in assessing and projecting future stock levels for those stocks listed above:

   a) The preferred tool for the presentation of a synthetic view of the past dynamics of an exploited stock and its future development is a stock assessment model, whether age-based or age-aggregated.

   b) For those stocks subject to analytical-type assessments, the status of the stocks should be reviewed and management options evaluated in terms of their implications for fishable stock size in both the short and long term. As general reference points, the implications of fishing at $F_{0.1}$ and F_{2004} in 2006 and subsequent years should be evaluated. The present stock size and spawning stock size should be described in relation to those observed historically and those expected in the longer term under this range of options.

   c) For those stocks subject to general production-type assessments, the time series of data should be updated, the status of the stock should be reviewed and management options evaluated in the way described above to the extent possible. In this case, the the level of fishing effort or fishing mortality (F) required to take two-thirds MSY catch in the long term should be calculated.

   d) For those resources for which only general biological and/or catch data are available, few standard criteria exist on which to base advice. The stock status should be evaluated in the context of management requirements for long-term sustainability and the advice provided should be consistent with the precautionary approach.

   e) Spawning stock biomass levels considered necessary for maintenance of sustained recruitment should be recommended for each stock. In those cases where present spawning stock size is a matter of scientific concern in relation to the continuing reproductive potential of the stock, management options should be offered that specifically respond to such concerns.

   f) Information should be provided on stock size, spawning stock sizes, recruitment prospects, fishing mortality, catch rates and TACs implied by these management strategies for the short and the long term in the following format:

      I. For stocks for which analytical-type assessments are possible, graphs should be provided of all of the following for the longest time-period possible:
         - historical yield and fishing mortality;
         - spawning stock biomass and recruitment levels;
         - catch options for the year 2006 and subsequent years over a range of fishing mortality rates
         - (F) at least from $F_{0.1}$ to F_{max};
         - spawning stock biomass corresponding to each catch option;
         - yield-per-recruit and spawning stock per recruit values for a range of fishing mortalities.

II. For stocks for which advice is based on general production models, the relevant graph of production as a function of fishing mortality rate or fishing effort should be provided. Age aggregated assessments should also provide graphs of all of the following for the longest time period possible:
   - exploitable biomass (both absolute and relative to B_{MSY})
   - yield/biomass ratio as a proxy for fishing mortality (both absolute and relative to F_{MSY})
   - estimates of recruitment from surveys, if available.

III. Where analytical methods are not attempted, the following graphs should be presented, for one or several surveys, for the longest time-period possible:
   - time trends of survey abundance estimates, over:
   - an age or size range chosen to represent the spawning population
   - an age or size-range chosen to represent the exploited population
   - recruitment proxy or index for an age or size-range chosen to represent the recruiting population.
   - fishing mortality proxy, such as the ratio of reported commercial catches to a measure of the exploited population.

For age-structured assessments, yield-per-recruit graphs and associated estimates of yield-per-recruit based reference points should be provided. In particular, the three reference points, actual F, $F_{0.1}$ and F_{max} should be shown.

7. Noting the Precautionary Approach Framework as endorsed by Fisheries Commission, the Fisheries Commission requests that the Scientific Council provide the following information for the 2005 Annual Meeting of the Fisheries Commission for the following stocks under its responsibility requiring advice for 2006: yellowtail flounder in Div. 3LNO, Shrimp in Div. 3M

   a) the limit and precautionary reference points as described in Annex II of the UN Fisheries Agreement indicating areas of uncertainty (for those stocks for which precautionary reference points cannot be determined directly, proxies should be provided);

   b) the stock biomass and fishing mortality trajectory over time overlayed on a plot of the proposed PA Framework (for those stocks where biomass and/or fishing mortality cannot be determined directly, proxies should be used);

   c) information regarding the current Zone the stock is within as well as proposals regarding possible harvest strategies to move the resource to (or maintain it in) the Safe Zone including medium term considerations and associated risk or probabilities which will assist the Commission in developing the management strategies described in paragraphs 4 and 5 of Annex II in the Agreement.

   d) A description of the advise using the Precautionary Framework differs from advice provided in the traditional manner.

8. The following elements should be taken into account by the Scientific Council when considering the Precautionary Approach Framework:

   a) References to “risk” and to “risk analyses” should refer to estimated probabilities of stock population parameters falling outside biological reference points.

   b) Where reference points are proposed by the Scientific Council as indicators of biological risk, they should be accompanied by a description of the nature of the risk associated with crossing the reference point such as recruitment overfishing, impaired recruitment, etc..

   c) When a buffer reference point is proposed in the absence of a risk evaluation in order to maintain a low probability that a stock, measured to be at the buffer reference point, may actually be at or

beyond the limit reference point, the Scientific Council should explain the assumptions made about the uncertainty with which the stock is measured.

d) Wherever possible, short and medium term consequences should be identified for various exploitation rates (including no fishing) in terms of yield, stability in yield from year to year, and the risk or probability of maintaining the stock within, or moving it to, the Safe Zone. Whenever possible, this information should be cast in terms of risk assessments relating fishing mortality rates to the trends in biomass (or spawning biomass),, the risks of stock collapse and recruitment overfishing, as well as the risks of growth overfishing, and the consequences in terms of both short and long term yields.

e) When providing risk estimates, it is very important that the time horizon be clearly spelled out. By way of consequence, risks should be expressed in timeframes of 5, 10 and 15 years (or more), or in terms of other appropriate year ranges depending on stock specific dynamics. Furthermore, in order to provide the Fisheries Commission with the information necessary to consider the balance between risks and yield levels, each harvesting strategy or risk scenario should include, for the selected year ranges, the risks and yields associated with various harvesting options in relation to Blim, and Flim and target F reference points selected by managers.

9. Many of the stocks in the NAFO Regulatory Area are well below any reasonable level of Blim or Bbuf. For these stocks, the most important task for the Scientific Council is to inform on how to rebuild the stocks. In this context and building on previous work of the Scientific Council in this area, the Scientific Council is requested to evaluate various scenarios corresponding to recovery plans with timeframes of 5 to 10 years, or longer as appropriate. This evaluation should provide the information necessary for the Fisheries Commission to consider the balance between risks and yield levels, including information on the consequences and risks of no action at all.

a) information on the research and monitoring required to more fully evaluate and refine the reference points described in paragraphs 1 and 3 of Annex II of the Agreement; these research requirements should be set out in the order of priority considered appropriate by the Scientific Council;

b) any other aspect of Article 6 and Annex II of the Agreement which the Scientific Council considers useful for implementation of the Agreement's provisions regarding the precautionary approach to capture fisheries; and

c) propose criteria and harvest strategies for new and developing fisheries so as to ensure they are maintained within the Safe Zone.

10. Regarding pelagic S. mentella redfish in NAFO Subareas 1-3, the Scientific Council is requested to review the most recent information on the distribution of this resource, as well as on the affinity of this stock to the pelagic redfish resource found in the ICES Sub-area XII, parts of SA Va and XIV and to the shelf stocks of redfish found in ICES Sub-areas V, VI and XIV, and NAFO Subareas 1-3.

11. Regarding redfish in Divisions 3L, 3N and 3O, Scientific Council is requested to review all available information and provide advice regarding whether the current management units (3LN and 3O) or any alternative may be the most appropriate.