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Fisheries Commission's Request for Scientific Advice on Management in 2001 of Certain Stocks in Subareas 3 and 4, including supplementary questions on Division 3M shrimp for 2000

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 2000 Annual Meeting, provide advice on the scientific basis for the management of the following fish and invertebrate stocks or groups of stocks in 2001:

   Redfish (Div. 3M)
   Yellowtail flounder (Div. 3LNO)
   Squid (Sub-areas 3 and 4)
   Shrimp (Div. 3M)
   Greenland halibut (Subareas 2 and Div. 3KLMNO)
   Capelin (Div. 3NO)

2. 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, 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. 3LN)
   American plaice (Div. 3LNO; Div. 3M)
   Witch flounder (Div. 3NO)

   To implement this system of assessments in alternating years, all stocks were assessed in 1999 but advice pertained to different time periods to allow the introduction of the new scheme over time. Consequently:

   - In 1999, advice was provided for 2000 and 2001 for American plaice in 3LNO, witch flounder in 2J3KL, cod in 3NO and redfish in 3LN. The next assessment of these stocks will thus be conducted in 2001.
   - In 2000, advice will be provided for 2001 and 2002 for cod in 3M, American plaice in 3M and witch flounder in 3NO. These stocks will then next be assessed in 2002.

   The Fisheries Commission requests the Scientific Council to continue to monitor the status of 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.

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

a) 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 $F_{0.1}$, F_{1999} and F_{max} in 2001 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.

Opinions of the Scientific Council should be expressed in regard to stock size, spawning stock sizes, recruitment prospects, catch rates and TACs implied by these management strategies for the short and the long term. Values of F corresponding to the reference points should be given. Uncertainties in the assessment should be evaluated.

b) 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 general reference points should be the level of fishing effort or fishing mortality (F) which is calculated to be required to take the MSY catch in the long term and two-thirds of that effort level.

c) 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.

d) Spawning stock biomass levels that might be 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.

e) Presentation of the results should include the following:

I. For stocks for which analytical-type assessments are possible:
- a graph of historical yield and fishing mortality for the longest time period possible;
- a graph of spawning stock biomass and recruitment levels for the longest time period possible;
- a graph of catch options for the year 2001 and subsequent years over a range of fishing mortality rates (F) at least from $F_{0.1}$ to F_{max};
- a graph showing spawning stock biomass corresponding to each catch option;
- graphs showing the 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 on fishing mortality rate or fishing effort.

In all cases, the three reference points, actual F, $F_{0.1}$ and F_{max} should be shown.

f) Squid (*Illex*) in Subareas 3 and 4 is a short-lived species such that a change in productivity regime could be sudden. The Scientific Council is requested to develop an in-season indicator of productivity level based on results from the annual July survey of the Scotian-Shelf and any other source of data. If it is not considered possible to develop an in-season indicator, the Scientific Council is requested to comment on the research that would be required to develop such an indicator. The Scientific Council is also requested to review the protocol outlined in FC Working Paper 99/18 and to advise on possible modifications to ensure its applicability on the long term, including a level of TAC which would be applicable during the high productivity regime.

4. Noting the progress made by the Scientific Council on the development of a framework for implementation of the Precautionary Approach, the Fisheries Commission requests that the Scientific Council provide, in their June 2000 report, the following information for the 2000 Annual Meeting of the Fisheries Commission for stocks under its responsibility requiring advice for 2001, or 2001 and 2002, as per Section 2 (i.e. cod in 3M, American plaice in 3M, yellowtail flounder in 3LNO, witch flounder in 3NO, redfish in 3M, Greenland halibut in SA 2+3KLMNO, capelin in 3NO, shrimp in 3M and squid in SA 3+4):

    a) the limit and target precautionary reference points described in Annex II indicating areas of uncertainty (when precautionary reference points cannot be determined directly, proxys should be provided);
    b) information including medium term consideration and associated risk or probabilities which will assist the Commission to develop the management strategies described in paragraphs 4 and 5 of Annex II in the Agreement;
    c) information on the research and monitoring required to 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 order of priority considered appropriate by the Scientific Council;
    d) 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;
    e) propose criteria and harvest strategies for re-opening of fisheries and for new and developing fisheries; and
    f) to work toward the harmonization of the terminology and application of the precautionary approach within relevant advisory bodies.

5. With regard to shrimp in Divisions 3LNO, the Fisheries Commission, with the concurrence of the Coastal State, requests that the Scientific Council:

    a) provide information on the fishing mortality on shrimp in Divisions 3LNO in recent years, as well as information on by-catches of groundfish in 3LNO shrimp fisheries;
    b) provide information on abundance indices and the distribution of the stock in relation to groundfish resources, particularly for the stocks which are under moratorium;
    c) provide information on the distribution of shrimp in Divisions 3L, 3N and 3O, as well as describe the relative and seasonal distribution inside and outside the NAFO Regulatory Area; and
    d) provide information on annual yield potential for this stock.

6. The Scientific Council is requested to summarize all available information from the Convention Area on catches of elasmobranchs, by species and by the smallest geographical scale possible. The Scientific Council is requested to review available information from research vessel surveys on the relative biomass and geographic distribution of elasmobranchs by species, and to quantify the extent of exploitation on these resources. Further, the Scientific Council is requested to initiate work leading to the development of precautionary reference points.

7. The Scientific Council is requested at its November 11-17, 1999 meeting to evaluate, on the basis of the best data available, whether the provision for a Div. 3M shrimp closure in FC Working Paper 99/16 would be a precautionary approach-based measure and if so, whether proposed area and timing of the closure are appropriate.

8. The Scientific Council is requested to compile and review all information on catches and/or discards of juvenile fish in the various NAFO fisheries. The Scientific Council is requested to describe and evaluate the effectiveness of additional technical management measures aiming at reducing catches of juvenile fish and male shrimp in the various NAFO fisheries.

With respect to elements 3 and 4, the Scientific Council is advised that additional or revised requests may arise from the next meeting of the joint FC-SC Working Group on the Precautionary Approach.