Fisheries Resource Conservation Council | Conseil pour la conservation des ressources halieutiques

Ottawa, Canada
K1A 0E6

December 13, 1996

Honourable Fred Mifflin, P.C., M.P.
Minister of Fisheries and Oceans
200 Kent St.
Ottawa, Ontario
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Dear Minister:

One of the components of the mandate of the Fisheries Resource Conservation Council (FRCC) consists in advising the Minister on research and assessment priorities. Our last letter to the Minister (January 1994) on this topic included: a call for a "new approach" to looking at the fishery and the ocean from an ecosystem perspective, using multi-disciplinary teams and a systems approach to deal with all aspects of the fishery; priorities to improve fish stock assessments and expanding the role in research of those with practical experience; and, specific initiatives that would further the goals of the "new approach."

Based on our own observations over the past two years, and on the excellent summary recently presented to us by the ADM Science, Dr. S. Parsons, we note that considerable effort has been devoted and progress made along many of the directions suggested in our 1994 letter. An ecosystem perspective is now clearly evident in groundfish status reports; sentinel fisheries have played an important role in increasing the participation of fishers in stock assessments and multi-disciplinary teams have been formed to deal with a number of science issues. On the other hand, little progress has been made in studying fisheries-as-a-system encompassing the environment, biology, economics and socio-political aspects.

In our recent report, *Building the Bridge*, we make a number of recommendations to you with respect to DFO Science. Many of our recommendations include a request for better industry and science cooperation and a need for expanded surveys, with industry involvement, expanding sentinel surveys to include offshore areas, index fishers programs, etc.. The Council emphasized the need to expand efforts on emerging species and, given the increasing limits on DFO resources, the Council believes that this is an area for "science-led and industry-run" cooperative surveys. Some examples of stocks which Council believes could benefit from joint science industry surveys include: 2GH Cod; 2+3K, 3Ps American Plaice; 2J3KL, 3Ps Witch Flounder; 0, 2+3 Roundnose Grenadier; 3LNOPs Skates; Unit 1 Redfish; and, 3NOPs4VWX5Zc Atlantic Halibut.

The FRCC remains strongly committed to the Science goals put forward in its 1994 letter. The present letter should not be construed as a departure from our previous recommendations, but rather as building upon them. Our comments are grouped under a few major headings which reflect the broad priorities which we have identified.

1. THE PRACTICE OF FISHERIES SCIENCE

Fisheries as a system, encompassing the relationships between the environment, the biological ecosystem, fisheries predation and the latter's relation to economic pressures and social conditions, remains a poorly understood phenomenon . While the complexity of fisheries ranges over the whole gamut of human experience, it is not *a priori* inaccessible to analysis. **Elucidating how the fishery works, including all its components, remains a worthwhile and potentially extremely rewarding goal for fisheries science and management.**

Steps towards this understanding include the creation of interdisciplinary teams, ranging over the natural sciences for bio-environmental problems, but spilling into economics and social sciences when broader questions are addressed. DFO would do well to encourage and draw upon academic collaborations in this endeavour. Within DFO itself, closer interactions between Science activities with that of other branches (e.g. Statistics) and between regions (especially, as an example, in the planning of Sentinel Fisheries) remains a priority.

As an example of an important aspect of fishery science, we bring forward the need to **achieve a closer monitoring of the fishing effort and of the efficacy of control measures, which are an important aspect of stock conservation in any fishery.**

An important element of conservation is the effect that various types of gear have on the habitat and on the fish population. While we do not recommend that DFO spend any of its resources on developing better ways to catch fish, we think that **it is important to understand better what the effect of each gear type is on the fish and their environment, as recommended in the forthcoming Gear Technology Report of the FRCC.**

2. IMPROVING STOCK ASSESSMENTS

Research surveys are a major tool in the assessment of the major groundfish stocks. Although these surveys have been developed using the best available knowledge of fish stocks and statistical science, they suffer from a number of weaknesses. Trawl surveys as they are now conducted provide only a relative index, not an absolute estimate of stock abundance. They miss important nearshore areas where stocks now seem to be concentrated. Most critically, they suffer from a lack of credibility among fishers. Reconciliation of inshore and offshore abundance estimates in 2J3KL, for example, is a major problem. **Improvements in these areas, in particular in integrating research survey estimates with acoustic surveys, inshore indices and sentinel surveys are crucial to the quality and impact of stock assessments. The Council is firmly committed to furthering the work of Sentinel Fisheries and, as noted in our October 1996 report to the Minister, believes this program should be expanded to include offshore areas.**

The inclusion of traditional knowledge into stock assessments remains a challenge. **Fishers and their organizations must be encouraged to identify issues of concern to them and ideas for their solution. Scientists must learn to expand their theoretical framework to accept first hand - albeit - less systematic fishers' information.**

Accurate identification of stock components and of their geographical distribution remains an important question. **Modern techniques of stock identification (elemental composition of otoliths, DNA...) must be brought to bear effectively onto practical issues of fisheries science and management. Traditional knowledge may also be useful in this respect.**

Recruitment is an essential element of stock renewal which is closely linked to the fecundity of fish of various ages. **An appreciation of the spawning potential of a stock is a valuable guide in assessing its renewal potential and should be made available as an index of rebuilding in threatened stocks.**

Recruitment and survival may also be strongly affected by ocean climatic conditions. Relations between ocean properties and stock performance remain highly speculative. **Within an ecosystem approach, an understanding of the influence that environmental and inter-specific effects have on recruitment is an important planning element.**

The FRCC is very concerned over the lack of information on species which are newly exploited and on low profile species such as lumpfish for which, despite a long history of fishing, we know very little of the biology and life history.

The Council recommends that DFO begin the process of collecting scientific advice on these resources and that the fisheries being developed be designed to collect this information as part of the development plan.

Science should establish a list of danger signals that indicate when stocks are in distress. Each danger signal should be measurable and Science should make the full list workable as a tool to implement the Precautionary Approach.

3. AN ECOSYSTEM APPROACH

There is much lip service paid by everyone to the "ecosystem approach". Some of the previous concerns focused on the interaction between seals and cod stocks and the FRCC is pleased with the progress made on this issue. Carrying forth scientific achievements, for example on contraceptive methods, to practical measures remains a desired objective.

A better understanding of the ecological relationships between groundfish, their food and their predators remains an worthwhile objective. The "Ecopath" model results developed for the Grand Banks ecosystem should be made available for instruction and discussion. A conference, or workshop, based perhaps on Ecopath results, might be useful to take stock of where we are in our ecological knowledge of groundfish in Atlantic Canada. It could assist in defining what aspects we can relate to day-to-day activity and define the areas where

knowledge is weak — with an objective to developing a timetable for resolving these issues.

Closed areas represent an important tool for conservation. **There is a need for information on the benefits of specific closed areas, with respect to habitat, ecosystem health and population diversity. In particular, Council believes that evaluation of the "haddock box" on the Scotian Shelf would provide a useful opportunity to undertake an ecosystem approach.** An evaluation of the effectiveness of the haddock box would also guide evaluations of the potential effectiveness of other potential closures (perhaps of spawning and juvenile areas for turbot) or marine protected areas.

Finally, there is a need for an appropriate balance between effort on stock assessment and attempts at understanding the mysteries of the biological behaviour of fish populations and their surrounding ecosystem.

We also want to take this opportunity to thank you for the excellent support the Council has received from DFO Science over the past 3 and a half years. This support has enabled the Council to make the strides towards rebuilding fish stocks and promoting conservation. The tasks and challenges ahead are great, but with cooperation among disciplines, we can build a sustainable fishery.

Yours sincerely,

Fred Woodman
Chairman