



# PROJECT SUMMARY

## REVIEW OF GROUND FISH GEAR AND HARVESTING TECHNOLOGY

Fisheries Operations • Fishing Industry Services

December 1994

### ■ Introduction

Given the level of concern regarding the effects of fishing gear on the collapse of Atlantic groundfish stocks, a multi-year Review of Groundfish Gear and Harvesting Technology was launched by the Department of Fisheries and Oceans (DFO) in December 1992. Its purpose is to establish appropriate linkages between groundfish gear and a sustainable fishery for the future.

The Review includes an assessment of the technical, economic and biological characteristics of the various groundfish harvesting technologies (fishing gears and methods). It also examines the possible effects by sector of any regulatory and technological changes which might be introduced to deal with problems stemming from the characteristics of the various gears or the ways in which they have traditionally been fished. Specifically, the Review was designed to:

- involve people in the fishery in problem/opportunity identification;
- explore options and alternatives;
- produce action plans to exploit opportunities and resolve problems; and
- promote awareness of responsible fishing practices and sustainable development.

Industry has been involved at each stage and will participate fully in the development of any future harvesting strategy to emerge from the process. Work has been underway on a number of fronts for some time.

biological) characteristics of the various gears and methods. Specifically, the study examined any cause and effect relationships between each gear type and harvesting technology and the state of the resource. An analysis of the pros and cons of each major gear type was included.

The list of specific fisheries assessed is as follows:

#### Gulf of St. Lawrence

- Mobile gear (under 65' 4T - F/G cod, including seine nets)
- Fixed gear (gillnet fishery 4T, 4S (boundary) - turbot and cod)

#### Scotian Shelf

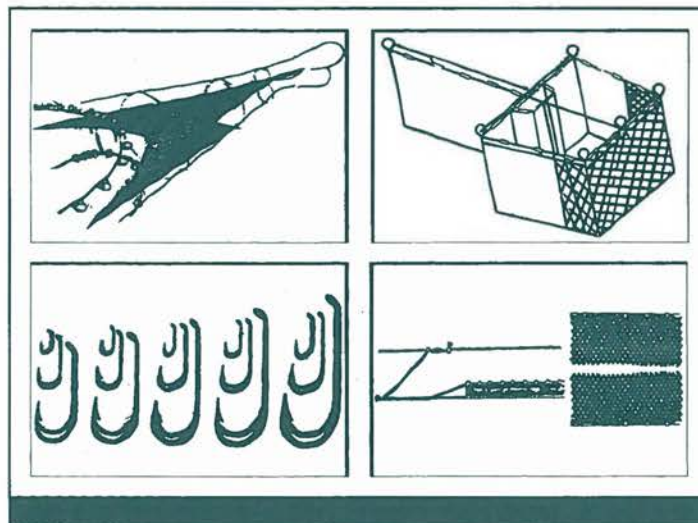
- Mobile gear (40' to 44'11" fleet - 4X)
- Fixed gear (40' to 44'11" fleet - 4X)

#### Eastern Newfoundland and Labrador

- Mobile gear (offshore trawlers)
- Fixed gear (under 65' gillnetters - turbot)

Its findings were discussed under the general headings of resource, environmental, regulatory and socio-economic impacts. General conclusions drawn include the following:

- The key determinant of fishing or economic performance is the size of boat used, rather than the type of fishing gear.



### ■ Technological Assessment - Groundfish Gear

One of the most significant elements of the Review is a technical assessment of six of the over forty groundfisheries in Atlantic Canada. Fishing gears examined include trawls, seines, gillnets, and longlines.

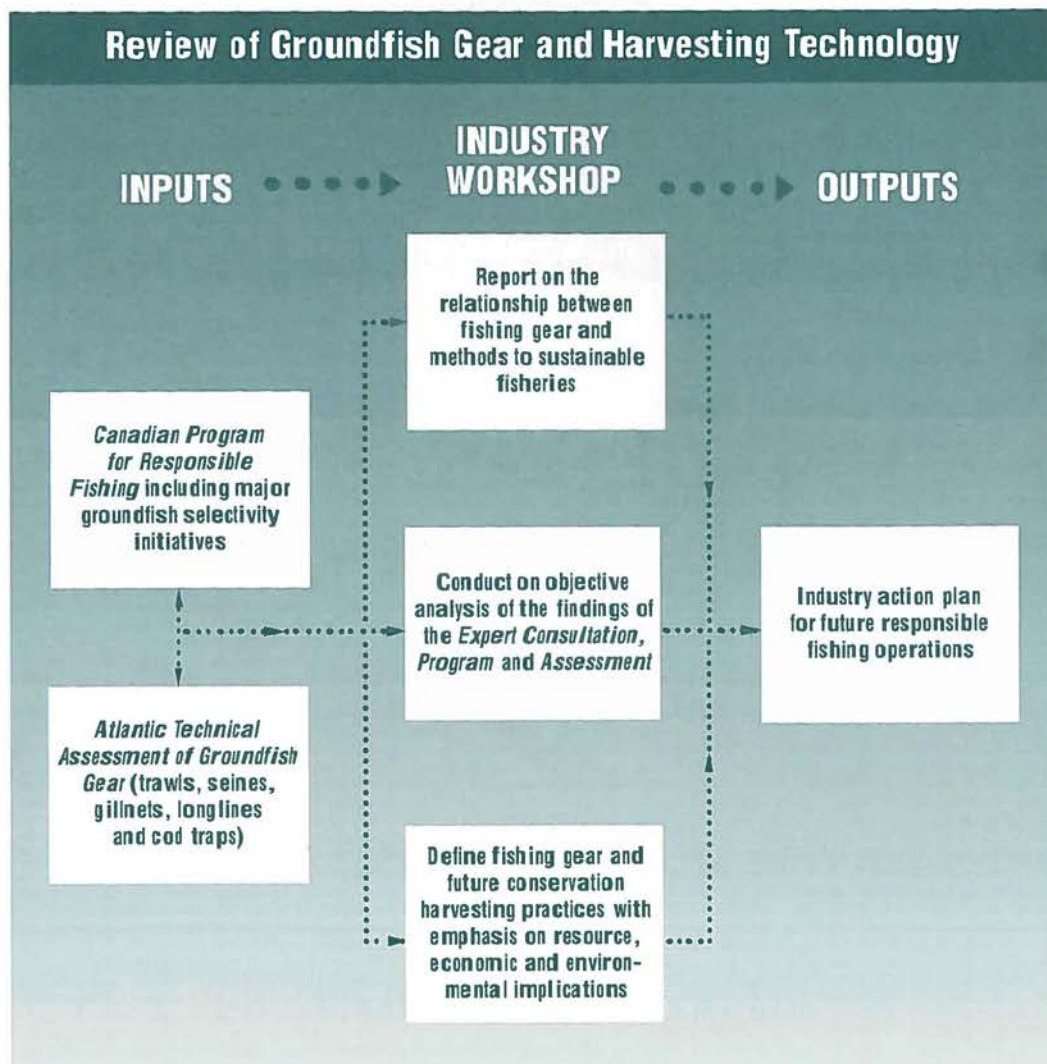
In this regard, a broad-based report and summary were prepared in March, 1994. They included an assessment of the technical (and some economic and

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- Overcapacity is the major problem in most sectors. Improving gear performance or giving preference to one gear type over another is not a viable substitute for a reduction in the number of vessels.
- A significant determinant of performance by the various vessel/gear combinations is the way in which they are operated, rather than any intrinsic characteristics of the technology.
- Overcapacity leads to economic stress. This in turn is a major motivating factor for the misuse of gear and for destructive fishing practices.
- Many apparent conflicts amongst gear and fleet sectors are not based on fact. Rather they are frequently based upon misconceptions, differences in social values or concerns over quotas.

Future discussions and consensus building in the fishing industry should revolve around these observations.



## ■ Cod Trap Selectivity Study - Newfoundland

Another element of the Review is a comprehensive technological study of the Newfoundland cod trap fishery by the province's Department of Fisheries. It included a literature review and analyses of various operating scenarios related to trap net fishing.

Questionnaires were sent to fishermen and departmental staff to obtain information on gear design, harvesting strategies, selectivity research, and distribution of effort in discrete

geographical subdivisions of the fishery. For each subdivision, data were obtained on: landings; level of effort; CPUE (catch per unit of effort); fish stock composition and fish size; by-catches; trends in the number of enterprises and traps fished; relationships between gear/mesh size and fish size; cost and earnings information; employment levels; capital investment; loss and repair costs; enterprise earnings; etc.

These data are being analyzed and trends described. Simple models (spreadsheets) are being used to predict the effect of possible regulatory measures on the

resource and on the viability of fisheries operations. A report summarizing the findings of the survey has been prepared for presentation to industry.

## ■ International Perspective

The Review also incorporates DFO involvement with the Food and Agriculture Organization of the United Nations (FAO) in developing a Code of Conduct for Responsible Fishing Operations.

Responsible Fishing was the subject of the Declaration of Cancun on May 6-8, 1992. At that time, the FAO/UN was requested to draft, in consultation with other organizations, an International Code of Conduct. A timetable for the project was established at the twentieth session of the FAO's Committee on Fisheries, March 15-19, 1993 in Rome. DFO subsequently agreed, as part of its Review, to host an international fisheries expert consultation on the subject.

The consultation took place in Sidney, British Columbia in June, 1994. The Department co-hosted the session with the FAO and prepared several detailed discussion papers as guidelines to the code on responsible harvesting practices, fishing gear selectivity and energy optimization. The output from the session will now be incorporated by the FAO into the draft principles of the code to be discussed with the international community in 1995.

## ■ Canadian Program for Responsible Fishing

At the same time, ongoing fisheries-related conservation technology work has been conducted by DFO across the country in full partnership with industry to find ways to modify traditional fishing gears so that they automatically release unharmed small fish and non-target species from the catch. This has involved, for example, selectivity experiments using square and diamond meshes of various sizes; rigid grate systems; lastridge ropes, separator panels, ghost-net prevention technologies and so on.

Results from all of these activities have been widely reported over the last few years in the form of technical reports, project summaries, small scale industry briefings and industrial videos. All of this information is available upon request from the Department.

## ■ Industrial Training Program in Responsible Fishing

There is general consensus in the fishing industry that there is an urgent need for a formal program to transfer technical information on responsible fishing to professional fishermen and those planning to pursue a career in the commercial fishery. DFO was recently approached by the New Brunswick School of Fisheries in Caraquet to provide technical advice and assistance in establishing a program.

It is planned that this Program will be developed in cooperation with the fishing industry and the five Atlantic Fisheries Training Institutes and will ensure that fishermen are introduced to the concept of sustainable fishing and trained in responsible harvesting operations in a formal, structured and comprehensive manner.

**PHASE 1:** In 1994, as a pilot project, a team of departmental fishing gear selectivity, resource management and science specialists worked with fishermen and the School to develop an Industrial Training Manual and seven training modules. These include subjects such as the FAO Code of Conduct for Responsible Fishing Operations, gear selectivity techniques; responsible harvesting practices and methods; fish biology/behaviour, fisheries management, marine electronics and environmental issues. It is anticipated that over a hundred New Brunswick fishermen will receive training this year.

**PHASE 2:** The next stage will involve principals and instructors from other interested fisheries institutes in Newfoundland, Nova Scotia, P.E.I. and Quebec who will be provided the information required to modify the program to meet the requirements of fishermen

in those areas. This will be done with the understanding that the program may be provided to over a thousand fishermen throughout eastern Canada annually.

In addition, there is no reason to believe that the Program could not be adapted successfully and transferred throughout Canada and abroad, perhaps under the sponsorship of the FAO.

## ■ Industry Workshop on the Review of Groundfish Gear and Harvesting Technology

- St. John's, December 13-15, 1994.

Every effort is being made to ensure the transparency of the Review exercise.

A large scale major industry Workshop will bring together industry interests from across Atlantic Canada for a full reporting on results-to-date. It will provide an opportunity for people in the industry to discuss the implications of our findings and build consensus regarding future directions.

The stage will be set with a presentation on responsible fishing operations from an international perspective. Results of the Review to date, a discussion of the Canadian Program for Responsible Fishing, and a presentation of the findings of the technical assessment studies requested by industry will be the focus of the Workshop for the remainder of the first day.

The second day will provide an opportunity for industry leaders (unions, associations and companies) and practicing fishermen (skippers/owners) to discuss work conducted as part of the Review and to begin the process of defining groundfish gear and harvesting practices for the future. This will be done in

working group sessions under individual chairpersons with the results to be reported back to plenary on Day Three. Appropriate emphasis will be placed on the resource, economic and technological factors.

The last day will involve presentations, including options and recommendations, from the working group sessions. These will be followed by a panel discussion in which industry leaders will respond and react to the suggestions contained in the earlier presentations. It is planned that this process will constitute the basis of a formal report with recommendations to the Department on a future course of action with regard to responsible fishing and conservation harvesting.

A Workshop Advisory Group with representation from the Fisheries Council of Canada, the Canadian Council of Professional Fish Harvesters and DFO will provide general direction regarding the Workshop. Participants will be selected by this group in consultation with other stakeholders. Because of the scope of the Review, the Workshop must involve a complete cross-section of the Atlantic groundfish industry and include participants from British Columbia and the Great Lakes.

The objective is to develop a fishery which is self-reliant, world competitive and capable of innovation without the need for public assistance. The fishery should also be managed on a sustainable basis and in a responsible manner.

Existing over-capacity is an impediment which must be resolved. At the same time, selective technologies and conservation harvesting strategies will continue to be pursued and more responsible fisheries developed.

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