

INDUSTRY & DEPARTMENTAL RESPONSIBLE & SELECTIVE SALMON FISHING TRAINING PROGRAM DEVELOPMENT

- The East Coast Experience

*Investigation of East Coast commercial fishery training for
applicability and use on the West Coast for fishermen, fishery
officers and fishery managers*

Written by Gordon Curry and Merrill Fearon
for the Participants

May 2000



Fisheries and Oceans
Canada

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Canada



Fishing
Salmon
Selectively
british columbia



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- The East Coast Experience

Investigation of East Coast commercial fishery training for applicability and use on the West Coast for fishermen, fishery officers and fishery managers

January 5-11, 2000

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Gordon Curry	Fisheries & Oceans Canada (Selective Fisheries Program)
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Hedard Albert, Merrill Fearon, Gordon Curry, Bob Rezansoff, Ron Parke, Christine Hunt, Les Rombough, Andrew Duthie; (front) Roger Poulin, Ed Thorburn



DEDICATION

The members of this team would like to recognize one of its members, Ron Parke, for his valuable contributions to this project and so many others in the past. Unfortunately Ron passed away shortly after returning home from this trip and we would like to take this opportunity to dedicate this report in his memory. He will be missed.

EXECUTIVE SUMMARY

Many of the Atlantic fisheries were in decline or collapse in the early 1990's, which strongly influenced fishermen to adjust their attitudes about conservation and management. The United Nations Food and Agriculture Organization and the subsequent Canadian Code of Conduct for Responsible Fisheries (industry led) were influential in guiding the changes required in this troubled industry. East Coast fishermen moved to professionalize, organize, develop quota fisheries and implement responsible and selective fisheries. The fishermen, with assistance from technical training institutions and government, were able to navigate through all this change by developing and delivering effective education programs. Currently, some stocks have rebounded, others have become very lucrative, and fishermen are getting back to what they do best, and now in a more responsible manner.

On a smaller scale, the Pacific salmon fishery has recently experienced the collapse of some coho stocks in concert with coast-wide declines of other species. Fishermen are wrestling with uncertainty and the need for significant change and are working to develop a fishery in response to these declines. The Selective Fisheries Program has provided funding and an opportunity to start addressing some of these changes by creating a more responsible and selective fishery. West Coast fishermen can take advantage of the experiences on the East Coast and develop a training and education program to guide them back into a viable and responsible fishery. Resource managers and fishery officers also need to keep pace with these changes and will require similar training to fully understand this new style of fishing.

INTRODUCTION

The United Nations Food and Agriculture Organization (FAO) has developed a Code of Conduct for Responsible Fisheries aimed at conservation of fish stocks and protecting the marine environment. Eighty countries, including Canada, adopted this international code in 1995. Canada played a leading role in its development. The Canadian fishing industry developed a Canadian Code of Conduct for Responsible Fishing Operations (1998), as a commitment to the achievement of sustainability in marine and freshwater fisheries. One of the goals of this movement is to have the Canadian code ratified by all commercial fishing organizations (currently about 60% have ratified). Selective fishing, and its development through research, education, training and implementation, is included under the principles of the Canadian code.

Significant coho salmon declines in the mid-nineties, especially with the Upper Skeena and Thompson River stocks, resulted in numerous programs by Fisheries and Oceans Canada (DFO) to protect these fish. The DFO Selective Fisheries Program was developed and funded for four years starting in 1998 to significantly reduce negative impacts on by-catch in all salmon fisheries. Almost 100 projects have been carried out to develop more selective methods of harvesting through avoiding the capture of by-catch, or when it is caught, releasing it alive and unharmed. The measures implemented in the 1998 salmon fisheries, and the results from the project experiments that are nearing the implementation phase, will result in a fishery significantly altered from the past. Fishermen are adjusting to a great deal of change, therefore an effective strategy to assist them in understanding and implementing an improved fishery is required.

Commercial fishermen requested assistance in developing a strategy to understand, accept and implement the changes required in their fishery. The Fishing Industry Selective Salmon Harvesters Association (FISSH) proposed an investigation of training programs and strategies used in Atlantic Canada that supported fishermen in adjusting to circumstances similar to their own. Through funding support of the Department's Selective Fisheries Program, a small investigative team was formed and visited fishing industry training institutions and harvester organizations on the East Coast to learn from their experiences and bring this knowledge back to the West Coast. This report documents this delegation's findings.

OBJECTIVE:

Investigate and report on the development process, content, delivery, funding, buy-in and evaluation by fishermen and fishery officers for the East Coast courses, and describe how these training programs may be replicated with West Coast content for use in British Columbia.

METHODS

The investigative team travelled on January 5, 2000, to visit the New Brunswick School of Fisheries in Caraquet. The school's staff, local fishermen and fishery officers gave presentations, a tour of the school and opportunities for discussion of their methods of training. The team also visited the office of the Federation of Acadian Professional Fishermen (Fédération Régionale Acadienne des Pêcheurs Professionnels Inc., FRAPP) in Shippagan, New Brunswick.

On January 8th the delegation travelled to Newfoundland to visit the Marine Institute at Memorial University. The Marine Institute also includes a School of Fisheries. Marine Institute and DFO staff gave presentations, a tour of the facilities and opportunities for discussion. The team also drove out to visit the Petty Harbour Fishermen's Producer Co-operative Society Ltd. to hear and discuss this group's experiences with training and education.

Prior to returning on January 11th the delegation held their own meetings (three) to reflect on what was learned from each of the visits and comment on strategies that may benefit West Coast fishermen. The information obtained and the resulting discussions from this investigative trip are highlighted in this document.

RESULTS & DISCUSSION

NEW BRUNSWICK SCHOOL OF FISHERIES -- Caraquet, New Brunswick



The New Brunswick School of Fisheries has been training fishermen and other fisheries workers since it was established in 1959. Working on a 300 year tradition of fishing, the school was developed to maintain a competitive edge in an industry that was and is constantly changing (*New Brunswick School of Fisheries*).

Mr. Hédard Albert (School Director) provided some background on the school. At first, fishermen did not want to learn at school so there were few students in the early years, but now up to 2000 students (fishermen, government and others) take training each year. The school is open year round but offers one to eight week courses when fishermen are in their off-season. Everyone is welcome to attend, even those who may not be able to read or write, and extra time is provided as needed so students learn at their own pace and can repeat exams until they pass. Funding assistance programs are also available for those who cannot afford the tuition fees. At present, about 70% of New Brunswick fishermen have taken some level of training at the school.

Transport Canada will be requiring certain skippers to have a masters certificate and in the future all fishermen will require a basic certificate to enter all fisheries. The fishermen in this area have the facilities and courses available to them to meet this requirement.

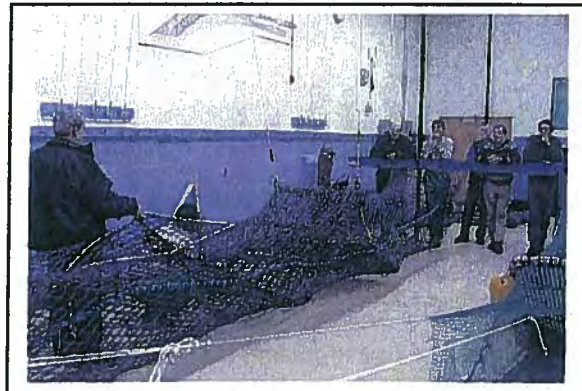


This school offers complete training for those in the fishing industry with courses in navigation, marine engineering, fishing gear, safety, aquaculture, boat repair and product quality. The delegation was given a tour of some of the school's facilities including fully equipped bridge simulators with real navigation, communications, sounder and sonar equipment. A net loft contained numerous full and scale model examples of selective fishing gear currently in use in New Brunswick. This gear is used for hands-on training of fishermen and DFO staff. There was also an engineering shop complete with operational diesel engines, a fully equipped

fabrication and welding shop, a computer room, a pool for the development of good safety practices and many classrooms, some of which were set up for teaching particular courses. When classes are not in session fishermen are welcome to use the facilities to improve their skills.

Recently this school has produced training programs on Responsible Fishing with a focus on gear modifications to reduce by-catch. Mr. Roger Poulin discussed the development and delivery of the Responsible Fisheries Program training. In 1994, the School of Fisheries, the Ministry of Fisheries and Aquaculture, DFO and Industry collaborated on the development of a Responsible Fisheries course that was piloted in 1995. Those responsible for the course development were the first to take the course and provide feedback. The actual training modules for fishermen include the following:

1. Review of the Fishing Industry
2. Fish Biology/Behaviour
3. Fisheries Management
4. Fishing Gear Selectivity – Fixed & Mobile
5. Electronic Gear
6. Environmental Issues
7. Review and Summary of Topic



This course takes three weeks and has been well received by New Brunswick fishermen. The course is delivered at the school. In the past similar training programs were delivered through community workshops, but these were found to have inconsistent results and a lack of continuity. Most courses are now provided at the school.

Harvesters from various fisheries take the course together and it has been found that when they understand each other's fishery there are reduced conflicts. The course material is updated each year based on the comments from fishermen and the changes in their fisheries. These course materials can be easily modified with West Coast content for use in B.C.

Developing buy-in by fishermen to take training is important, as there needs to be clear benefits as a result of having the training. When the school develops a course they involve key fishermen chosen by the school staff, as well as others recommended by fishing associations. If these key fishermen are involved in the course development and content and believe in it, this message is passed to others. When an experiment proves a new fishing strategy to be effective, this information is included in the course and the report is made public. Fishermen then adopt the new method and DFO makes it a legal requirement. Those who do not comply receive pressure from those who are, people in the community, and are at risk of being charged. Mr. Poulin told a story about the local lobster fishery where poaching had been common and somewhat acceptable (30-50% were poaching). Through an increased involvement in the management of their fishery and a greater sense of ownership (through quotas), poaching is no longer an acceptable practice.

Two fishery officers, Gaëtan Couturier and Alphonse Gosselin, gave a presentation on their involvement with the development of a training program similar to the one provided to fishermen (but more condensed). This course will be piloted in 2000. In the past it was found to be critical to educate fishery officers on the changes in the industry so that they can effectively keep pace with and enforce the new measures. Fishery officers needed to identify different gear, how it works, how the gear could be modified to cheat, and the impacts of using the gear. Fishery officers armed with this knowledge become more confident when interacting with fishermen and monitoring their methods of fishing. By understanding why a particular measure is implemented in a fishery, what that measure is, and how important it is, gives the fishery officer the ability to practise effective enforcement. Without this information a Fishery Officer can only decide whether to charge or not, with little room to use discretion effectively. With this information, enforcement actions reflect the intent of the regulations. The training modules for fishery officers includes the following:

1. Historical Background of Commercial Fisheries
2. Biology of Local Species
3. Selective Harvesting Technologies
4. Ghost Fishing, Pollution by Gear, Dumping & Discarding Fish at Sea
5. Fisheries Management, Science & Responsible Fishing
6. Law Enforcement & Detecting Violations

The effectiveness of this training course has not been analyzed but it is clearly needed for both recruit and experienced fishery officers. They also plan to involve some experienced fishermen to assist with the training and demonstrations on how the gear may be inappropriately used. With so many changes occurring in the West Coast salmon fishery there is a need to train fishery officers in the Pacific Region in a similar manner.

The New Brunswick hospitality culminated in an evening gathering of harvesters, School of Fisheries staff, DFO and spouses. The delegation was treated to local seafood treats including a main course of smelts and a sharing of stories from both coasts.

FEDERATION REGIONALE ACADIENNE DES PECHEURS PROFESSIONELS (FRAPP) – Shippagan, New Brunswick

An informal meeting was held at the office of the Acadian Federation of Regional Professional Fish Harvesters (FRAPP) hosted by Mr. Jean Saint-Cyr and Mr. Joël Gionet. The structure and function of this inshore fishermen organization were outlined and discussed. This organization represents crab, shrimp, groundfish (includes herring) and crewman associations. The FRAPP Board of Directors function on the basis of co-management and consensus decision making. When an issue arises they organize a meeting and work out an action plan. If the issue is between associations they also try to resolve it through consensus but if they reach an impasse they can go to a vote, although this is apparently very rare.

Many fisheries in this area were in decline or collapse in the early 1990's, therefore fishermen's attitudes towards conservation and management started to change. The United Nations Food and Agricultural Organization messages for a more responsible fishery started to filter through at this time. Experimentation with new fishing gear, and methods to address by-catch issues, were started with collaborative efforts between influential fishermen and government. Fishermen saw that their competitive fishery did not work, so all fisheries moved to quotas to create some stability with the stocks and catches. The processing sector had to make adjustments while maintaining or increasing quality. Fishermen then started a move to limit fisheries to bona fide professional harvesters. Professionalization was accomplished through training, education and organization. The stage was now set for the implementation of responsible and selective fisheries with a huge fleet redirecting their fishing efforts. The status of the current fishery is that some stocks have rebounded while some of the fleet has moved to new, and in some cases, very lucrative fisheries (e.g. crab and shrimp).

FRAPP represents inshore fishermen who are owner operators, many of whom are also processors. There are approximately 3500 plant workers to handle the catch in the area, although the full workforce is not always required for each fishery. In order to maintain the local workforce for all fisheries (large or small) with stable employment, they have created a solidarity fund. Each vessel may pay into the fund about 15 to 30 thousand dollars. An example of how they administer the payments into the fund was outlined for the crab fishery. The landed value up to \$500,000 (approximately 80% of their quota) is 100% for the fishermen but on landings beyond this amount 40% goes into the solidarity fund. This method is similar for other fisheries but the formula is different. The solidarity fund is then used to supplement the income of the shore workers by creating employment outside processing but of value to the fishing community. The result is that this large workforce has more stable longer-term employment that encourages them to stay in the area. Some would also qualify for unemployment insurance for a portion of the year.



The FRAPP office building was newly renovated and serves as a very organized and functional place from which to carry out their business. Behind their office was the fleet of very well maintained vessels in dry-dock for the winter. It was interesting to note that the seine vessel "Intrepid #1", that had fished on the West Coast for herring and salmon, was now located here for the herring fishery (blue vessel in the photograph).

THE MARINE INSTITUTE'S SCHOOL OF FISHERIES - Memorial University, St. John's, Newfoundland

The Marine Institute began as the "College of Fisheries, Navigation, Marine Engineering and Electronics" in 1964. The college affiliated with Memorial University in 1992 and has grown into a world class centre of advanced marine technology and education now supporting 170 faculty with approximately 1000 students (*Invitation to Partnership*).

The Fisheries and Marine Institute of Memorial University (Marine Institute) offers education, training and applied research in support of the fishing, aquaculture and marine transportation sectors. There are two schools at the Institute, the "School of Fisheries" and the "School of Maritime Studies". The maritime studies focus on marine navigation and offshore safety and survival. The fisheries school addresses the needs of the harvesting, processing and aquaculture sectors.



Within the School of Fisheries is the "Fishing Technology Unit" that specializes in the needs of harvesters and fishing gear manufacturers through the use of their flume tank. The flume tank is 24 metres long by eight metres wide and four metres deep and has a laminar flow of water. A large belt covering the entire bottom of the tank moves to emulate the towing of fishing gear over the ocean floor. Scale model fishing gear is tested and observed in this tank to measure performance. This testing, if carried on at sea, would take much more time and money, through trial and error, to develop new methods of fishing. The flume tank is the largest facility of its kind in North America and draws clients from all over the world.



Mr. John Foster (Special Advisor – Fisheries) provided an overview of the Marine Institute and how training is industry driven. The focus in the past five years has been on responsible and selective fisheries but prior to this it was on increased efficiency and harvest. When the cod stocks collapsed in the early 1990s the

employment in the fishery dropped, and is still down, but the value of the fishery has gone up due to a few valuable fisheries (e.g. shrimp and crab). Since 1991 the local union has been working on professionalization and certification so that only bona-fide fishermen are involved in the fishery. There are currently 15,000 registered fishermen with about 1000 more wanting training to get in.

Captain Jan Negrijn (Marine Institute) provided overviews of their fisheries training programs. The Responsible Fisheries Training Program was based on the courses offered at the School of Fisheries in Caraquet, N.B. The courses in Newfoundland are delivered with the assistance of fishermen trained as trainers to deliver much of the course content in the communities. Many of the Marine Institute staff were also fishermen so this lends additional credibility for the courses that are developed and delivered. The Marine Institute has developed the course material in collaboration with fishermen and DFO, and ensures a consistent delivery throughout the Province. The course modules include the following:

1. Historical Perspective and Recent Initiatives
2. Fishing Gear Design and Harvesting Operation
3. Fish Biology and Behaviour as Related to Responsible Fisheries
4. Fishing Gear Selectivity
5. Estimating and Reducing Unaccounted Fishing Mortalities
6. Impact of Fishing on the Resource and the Environment
7. Fisheries Management

Captain Negrijn sees training in responsible fishing as a “process” because there are continually new strategies developed that need to be incorporated into the training modules. Consultation with harvesters is key to maintaining courses that are relevant and valuable for fishermen and their changing needs. There are many other courses offered for fishermen as part of the move to professionalize. Forty-three courses (list in Appendix) are available to harvesters and cover safety, management, fishing techniques, maintenance and repair. Apparently when fishermen viewed this list they were encouraged by how much they did know and this increased the sense of pride they had for their profession. Fishermen are given credit for many of the courses due to many of them having extensive knowledge and work experience. Others have an opportunity to challenge courses by writing the exam. Fishermen had free access to many training aids including an extensive video library (at centres in 27 locations), and in three languages (English, French and Inuktitut).

The Professional Fish Harvesters Certification Board of Newfoundland and Labrador developed the standard for registering bona fide fishermen. This Board had its beginnings from a meeting held at the Marine Institute in 1990 by the Inshore Council of the Fish, Food & Allied Workers. In 1994 there had been over 250 meetings with an attendance of about 5000 harvesters, 90% voted for acceptance of professionalization. The Professional Fish Harvesters Certification Board became a non-profit operational entity in 1997. There are 15 Board members appointed by the Newfoundland and Labrador Minister of Fisheries including four from government and eleven that represent fleet and processing sectors.

The Board's definition of professionalization is:

"recognizing the special skills and experience required to become a Professional Fish Harvester. Professionalization involves bestowing professional status on fish harvesters who have a long-term attachment to fishing and setting qualifying standards for new entrants." (Professional Fish Harvesters Board Newfoundland & Labrador)

Harvesters will be required to have greater involvement in the management of the fishing industry so professionalization is seen as a first step in securing fishermen's role in the fishery of the future.

A mandatory minimum requirement to be certified is 45 core credits and 15 elective credits from the list of courses that are offered through the Marine Institute (*Marine Institute Courses*). Many fishermen were "grandparented" to the appropriate certification level in 1997 based on fishing experience and their dependence on fishing for their income. Fishermen were placed into three categories "Apprentice Fish Harvester, Professional Fish Harvester Level I or Professional Fish Harvester Level II". This has resulted in approximately 15,000 professional fishermen who are certified to date (*Professional Fish Harvesters Board Newfoundland & Labrador*).

To reach fishermen all over Newfoundland and Labrador the Marine Institute has used a number of techniques. The use of workshops for fishermen provided them with the awareness and understanding about the changes required and then they wanted more. The courses were developed and the Marine Institute used many different delivery methods. Many courses were offered at the Institute taking advantage of all the facilities but many courses were taught out in the communities. Correspondence courses were developed and made available and often required some use of a computer. The training vessel "Mares" travelled out to communities for some hands-on training and to bring trainers and their materials to remote sites.

The Marine Institute recognises that with the recent professionalization and certification of fish harvesters, and the industry-led development of a Canadian Code of Conduct for Responsible Fishing Operations, there is a need for effective, hands-on and up-to-date education and industrial training programs and workshops. If these training strategies are to be effective they must be accessible to harvesters when and where it is appropriate, giving consideration to the annual cycle of fishing activities.

A less formal method of keeping fishermen informed involved the use of a local weekly television program called "The Twine Loft". Eighty-five shows were inexpensively produced by Marine Institute staff and harvesters, focusing on pertinent fisheries issues, and aired to a large audience. In the first year 450 letters were received in response to the programs. "The Twine Loft" is no longer produced but a thirty-minute radio broadcast at 5:30 p.m. each day ("Fishing Broadcast") keeps fishermen up-to-date on the latest developments in the fishery. It is clear that the East Coast fishery has a much greater profile within the broader community, in comparison to the West Coast.

The next generation is presently in grade school so courses have been developed and taught with a focus on conservation. To round out the knowledge in the schools there are also courses on the various fisheries and what fishermen are doing, including responsible fisheries, selective fisheries and gear changes.

Mr. Rick Stead a research technician with DFO described the "sentinel fishery", a test fishery for cod that was developed to generate stock status information after the collapse in 1992. With no cod fishery there was very little information to determine whether there was any change in the stock status, as DFO did not have an assessment method without a fishery. The sentinel fishery was developed through selecting fishermen who met the requirements of the program and then one application per community was considered. The successful test fishermen were then given training in the scientific method, standardized methodologies, stock assessment and reporting. The quality of the results when this program started were very good and the success of this program helped in the development of future training programs. One of the biggest benefits was that fishermen gained knowledge of the scientists' world, and the scientists gained knowledge of the fishermen's world.

Many strategies were needed to generate "buy-in" by fishermen for training. When the fishery was faced with a great deal of change, workshops provided a greater understanding of the problems, so many harvesters then requested more information. Some fishery changes resulted in economic gains to the harvester by using the new method or gear. In this case it was an easy sell but often it was not. If changes resulted in a higher quality product there was no incentive unless the plants were willing to pay a differential price for quality. In 2000 there is a push to have different prices for grade "A" versus grade "B". Another method of creating buy-in for training that the Newfoundlanders have used is to legislate it. In order to access a fishery a minimum amount of training is required for the skipper (and in the future the crew).

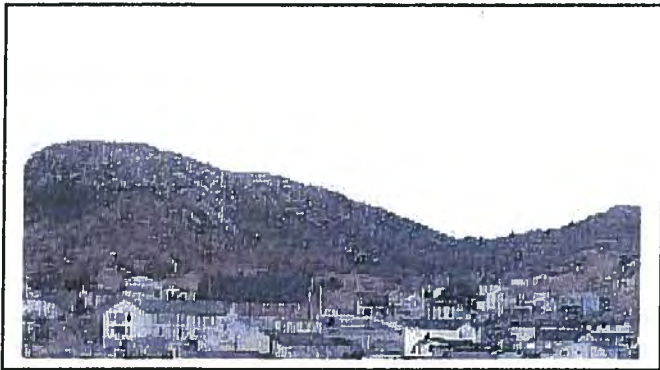
The Department also closed fisheries on the East Coast where there was a concern for by-catch species. When industry could prove through experimentation that they were selective enough and could comply with the new method of fishing, they regained access to the fishery.

The buy-in to the change toward more responsible selective fisheries has been slow so those most influential in managing the change in Newfoundland are doing what they can with the existing harvesters (legislate the current participants). By focusing some training on the younger generation it is anticipated that the next generation of harvesters will start with a different set of values from which to enter the fishery.

Mr. Gerry Brothers has worked with DFO for 30 years, mostly with gear development, including a focus on selective fishing for the past 10 years. Mr. Brothers outlined the training programs for fishery officers. All new recruits take a national training program in Cornwall, Ontario, and it is here that they are introduced to a one-day course on responsible fisheries and gear. The next step in training is a two-day course on harvesting gear technologies which is included in a 5-7 week course delivered regionally that covers many other fisheries related topics.

The East Coast hospitality continued here too with the Marine Institute hosting a dinner at a local restaurant with some of their staff and local fishermen for an evening of informal sharing of experiences around the fishery.

PETTY HARBOUR FISHERMEN'S CO-OPERATIVE – Petty Harbour, Newfoundland



The West Coast delegation travelled out to the small fishing community of Petty Harbour to talk with fishermen about their experiences. Mr. Tom Best and Mr. George Chafe provided an overview of their fishing community, and videos of their current test fishery, which all culminated in a traditional Newfoundland dinner at the church hall, and an opportunity for further discussion.

This community once had 130 small boat fishermen including up to 84 who belonged to the local Petty Harbour Fishermen's Co-operative. The present membership is down to 47 active members who have been moving into the crab and shrimp fisheries while some work on the sentinel fishery (cod). The processing plant in this community has not operated since the cod moratorium in 1992. As there are only three co-operatives in Newfoundland most of the fishermen are represented by the union. The union co-ordinated training for their membership while the co-ops organized training for theirs.

When the cod collapsed there was lots of money for training, so people and organizations competed for what they could get. Eventually over 100 training co-ordinators, all of whom were fishermen, became trained as trainers. Although the community colleges carried out this phase of the training, the fishermen were heavily involved in course content. Without a fishery and with lots of training there was little incentive to continually increase one's education. Those who took the fisheries training are gradually getting back into the fishery for other species or researching the possibilities of cod holding (grow out), use of selectivity grates (size) or aquaculture. Others took training to upgrade to grade 12 and get out of the fishery, and some found work or moved away. Those who did not take education and training searched for jobs outside the fishery and many still do not have work.

The sentinel fishery involved a number of hand-line and trap fishermen working with DFO to gauge the relative abundance of cod. Trust was built between DFO and fishermen by working together on testing the stocks for signs of recovery. The fishermen in Petty Harbour stated they are not going back to the old competitive fishery as they are working on a more sustainable one for the benefit of their community.



THE B.C. DELEGATION'S MESSAGES FROM THIS INVESTIGATION

The B.C. delegation had three meetings to distil what was learned from the various investigations on how the East Coast fisheries leaders handled the changes in their industry through training and education. The following are comments from this team's findings:

The Messages

- Fishermen world-wide are developing a sense of responsibility for their own fishing and adopting the United Nations Food and Agriculture Organization's Code of Conduct for Responsible Fisheries.
- The Canadian Code of Conduct for Responsible Fisheries was developed by the Canadian fishing industry and is endorsed by most commercial fishing organizations in this country.
- The need for selective fishing is an international phenomenon (included under the code principles), not local politics, on how to conduct fisheries now and into the future.
- The East Coast fishery had to collapse in order to move fishermen to the realization that they had to change their fisheries management and fishing practices. This attitudinal change helped to start the process for change that is working to bring the fishery back in the east.
- Another key tool the East Coast harvesters used to move towards the fishery of the future is greater organization combined with professionalization.
- By adopting selective fishing techniques West Coast fishermen will have an opportunity to access salmon fisheries they have lost in recent years. By not adopting a more selective fishery, fishermen will see reduced opportunities to harvest.
- Training and education will be an important tool to help fishermen adjust to the significant change occurring in their fishery. Recognizing the skills that fishermen possess and adding what is new will create a new type of responsible professional harvester who will again have the abilities needed in the new fishery.
- Fishery officers and resource managers will also benefit from a more complete understanding of the fishery, its harvesters and the gear and methods of fishing.
- By incorporating all the necessary changes into the salmon fishery, the goal is to create an industry that is viable.

THE B.C. DELEGATION'S RECOMMENDATIONS FOR THE WEST COAST SALMON FISHERMEN

How to get Buy-in from Fishermen?

- Fishermen on the West Coast need to understand what has happened on the East Coast and how fishermen have benefited from adopting a more responsible and selective fishery. This delegation needs to get this information out to all fishermen.
- West Coast fishermen need to be aware of the benefits of taking training in responsible and selective fisheries so that there is greater acceptance. They also need to understand the consequences of not developing a greater understanding and implementation of selective fishing strategies.
- The messages need to come from industry for greater acceptance.
- A consistent approach must be taken with all salmon fisheries so that no one is feeling singled out and everyone is working towards a similar goal of conservation.

How to Get the Messages Out?

Short Term

- Provide the findings of this delegation to owner operators, company skippers, corporate sector and the Department.
- Others with an interest in the salmon fishing industry need to be receiving the same message from this investigation such as the union, Province and coastal communities.
- A plan needs to be made that outlines how to develop, administer, fund and deliver the training that fishermen require. Any course content needs to have strong input from representative local fishermen.
- Work needs to start on adapting East Coast course materials for the West Coast through partnerships with colleges and universities.
- Training and education programs need to be accessible and consistently delivered to the salmon fishermen on this coast.
- At the same time the appropriate course materials need to be adapted and made available to resource managers and fishery officers.

Long Term

- A dedicated facility to use for training that is fishermen friendly and that can serve as a focal point for this vocation as it becomes more professional.

Appendix & References

The following materials are appended and were used in the writing of this report:

- *Industrial Training Program Responsible Fishing – Program Outline*, New Brunswick School of Fisheries, Caraquet, New Brunswick, 1994.
- *Responsible Fisheries Program for Fishery Officers – Program Outline*, New Brunswick School of Fisheries, Caraquet, New Brunswick, 1999.
- *Industrial Training Program, Canadian Responsible Fishing* – Fisheries and Marine Institute of Memorial University of Newfoundland, St. John's, Newfoundland.
- *Responsible Fisheries Training Program for Atlantic Fishing Industry* – Fishing Technology Unit, Fisheries and Marine Institute of Memorial University of Newfoundland, St. John's, Newfoundland, 1998.
- *Marine Institute Courses – Professionalization of Newfoundland Fish Harvesters* – Course List, Fisheries and Marine Institute of Memorial University of Newfoundland, St. John's, Newfoundland, 1999.
- *Professional Fish Harvesters Certification Board Newfoundland & Labrador* – St. John's, Newfoundland.
- Power Point presentation of the East Coast trip

The following materials were used in the writing of this report but are not appended:

- *New Brunswick School of Fisheries – Caraquet*, New Brunswick Fisheries and Aquaculture (overview of the school, no date).
- *Invitation to Partnership* – Marine Institute, St. John's Newfoundland (one page information sheet)
- *Growth through Partnerships* – CD ROM outlining the Marine Institute of Memorial University of Newfoundland, copyright 1999 Fisheries and Marine Institute, St. John's, Newfoundland.
- *Canadian Code of Conduct for Responsible Fishing Operations* – Consensus Code, 1998.

INDUSTRIAL TRAINING PROGRAM RESPONSIBLE FISHING



New Brunswick
School of Fisheries
CARAQUET
1994

PROGRAM OUTLINE



Fisheries and Oceans
Pêches et Océans

New Brunswick
Nouveau
Pêche et Aquaculture
Fisheries and Aquaculture

INDUSTRIAL TRAINING PROGRAM IN

RESPONSIBLE FISHING

PROGRAM OUTLINE

JMAC AND ASSOCIATES TRAINING & CONSULTING SERVICES

**CO-ORDINATED AND SUPERVISED THE DEVELOPMENT OF THE PROJECT
WORKING WITH THE FOLLOWING TEAM AND ADVISERS:**

DEVELOPMENT TEAM

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Mr. Roger Paulin
Mr. Élide Chiasson
Mr. Alonzo Rail
Mr. Hédard Lanteigne
Mr. Johnny Branch
Miss Pierrette Albert
Miss Bonita Blanchard
Mr. Donald Doiron
Miss. Isabelle Gallien
Mr. Jim McLevey,
JMAC & Associates

GOVERNMENT ADVISERS

Mr. Andrew Duthie (DFO)
Mr. Rhéal Boucher (DFO-NB)
Miss Florence Albert (DFO-NB)
Mr. Ghislain Chouinard (DFO-NB)
Mr. Marcel Boudreau (DFO-Que)
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INDUSTRY ADVISERS

Mr. John Foster (Aqua Projects Inc.)
Mr. David Tait (Nordsea)
Mr. Serge Deblois (Quebec)

FISHERMEN ADVISERS

Mr. Claude Paulin
Mr. Jimmy Ward
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Mr. Camillien Haché
Mr. Alyre Gauvin
Mr. Pierrot Haché
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Mr. Edmond LeBouthillier
Mr. Gaëtan Savoie

INDUSTRIAL TRAINING PROGRAM IN RESPONSIBLE FISHING

Inputs

FAO Int'l Code of
Conduct for
Responsible
Fishing

Industrial Advice
from practicing
Skippers

Canadian Program
for Responsible
Fishing

Technical,
Scientific and
Resource
Management
Expertise

Training
Program
Design and
Development

MODULES

Review of the
Fishing Industry

Fish Biology/
Behavior

Fisheries
Management

Fishing gear
Selectivity-
Fixed & Mobile

Electronic
Gear

Environmental
Issues

Review and
Summary of
Topic

Outputs

PHASE 1
New Brunswick
Industrial Training
Program in
Responsible Fishing

PHASE 2
Atlantic
Industrial Training
Program in
Responsible Fishing

ACKNOWLEDGEMENT

The N.B. School of Fisheries, through their close working relationship with fishermen and knowledge of the industry, identified a need to develop an industrial training program in Responsible Fish Harvesting.

Mr. Hédard Albert, Director of the school, approached the Fisheries Technology Division of the Department of Fisheries and Oceans seeking assistance in "establishing a strategy and formulating a program" in Responsible Fish Harvesting.

The development of the program was completed through the cooperation and joint funding efforts by the Department of Fisheries and Oceans, E.M.R. and the N.B. Department of Fisheries and Aquaculture.

JMac and Associates Training and Consulting Services co-ordinated and supervised the development of the project, working with three teams:

Government & Industry expert advisors

Mr. Andrew Duthie, Industry Services, DFO
Mr. John Foster, Aqua Projects Inc.
Mr. David Tait, Nordsea
Mr. Rhéal Boucher (DFO-NB)
Miss Florence Albert (DFO-NB)
Mr. Ghislain Chouinard (DFO-NB)
Mr. Marcel Boudreau (DFO-Quebec)
Mr. Réjean Hébert (DFO-NB)
Mr. Serge DeBlois (Quebec)
Le Groupe Poupart Inc.

Fishermen from the local area

Mr. Claude Paulin
Mr. Jimmy Ward
Mr. Bertrand Mallet
Mr. Camillien Haché
Mr. Alyre Gauvin
Mr. Pierrot Haché
Mr. Zoel Breau
Mr. Edmond LeBouthillier
Mr. Gaëtan Savoie

The Development Team

Mr. Hédard Albert
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Miss Pierrette Albert
Mr. Donald Doiron

Mr. Roger Paulin
Mr. Alonzo Rail
Mr. Johnny Branch
Miss Bonita Blanchard
Mr. Jim McLevey
JMac and Associates

Development of the program

The development process was a cooperative one involving the three teams.

In July 1994, Mr. J. McLevey of JMac and Associates was engaged to develop an industrial training program on Responsible Fishing. A six module program was submitted to a review team which convened a meeting on July 20 and 21 in Caraquet. The review team comprised; Mr. Hedard Albert, Director of the School of Fisheries of N.B., Mr. Johnny Branch, N.B. Department of Fisheries and Aquaculture, Mr. Andrew Duthie, Department of Fisheries and Oceans of Canada, Mr. John Foster of Aqua Projects, Mr. David Tait of Nordsea. The review team endorsed the proposed modules and added a seventh module to include the effects of ghostfishing, pollution and environmental issues.

Project facilities were made available at the N.B. School of Fisheries and the development team formed which proceeded with the task of preparing instructor notes, student notes, teaching aids and lesson plans.

This development work took place from first September to early November 1994 in consultation with the fishermen's advisory group and industry expert advisors. The modules were translated into the French language for delivery of the pilot program mid-December 1994 at Caraquet.

TARGET AUDIENCE

A pilot program of ten days duration will be given to a selected group of 12- 15 fishermen from the Caraquet area. This program will be evaluated. Following the analysis of the evaluation, a workshop for the directors of training institutes in the Atlantic Region will review the modules, and the evaluation.

From this process the program can be adapted where appropriate to meet the needs of each region and be directed to all parties connected with the fishery.

INSTRUCTOR NOTES

The instructor notes are intended as "Core" material for the instructor to be used with additional reference material as appropriate at the discretion of the instructor.

The module notes will facilitate the process of understanding and developing knowledge of the concepts of responsible fishing as this relates to biological and environmental issues, use of fishing gear and an understanding of the Fisheries Management process.

The modules set a foundational base for programs that can be used in fishery training institutes throughout Atlantic region which may adopt the program.

STUDENT NOTES

For the pilot program being conducted at Caraquet, December 1994, the student notes will comprise copies of the overheads used in each module. These overheads summarize the key issues of each module and will serve to facilitate the student participants of knowledge and understanding of the concepts of responsible fishing.

BACKGROUND TO PROGRAM

The industrial training program is part of a much larger pattern of events which could change the face of the fishery as we know it in Atlantic Canada.

Responsible fishing was the subject of the Declaration of Cancun put forward at the International Conference on Responsible Fishing in Mexico in 1992. The Declaration called on the UN/FAO to draft, in consultation with relevant organizations in member states a Code of Conduct for Responsible Fishing.

Meanwhile, over the past few years, the Department of Fisheries and Oceans has been conducting the Canadian Program of Responsible Fishing, including a comprehensive review of fishing gear and harvesting technology in Atlantic Canada. Various components of the program and the review have been completed, one of the most relevant being the FAO International Expert Consultation to develop Codes of Conduct for Responsible Fishing Operations.

The Consultation, hosted by DFO, was held from June 6-11, 1994 in Sidney, British Columbia. It provided for a free exchange of information among technical specialists from twenty fishing nations around the world, much of the information applicable within the Canadian context.

The purpose of the Expert Consultation was to prepare for the FAO Committee on Fisheries, Code of Conduct for Responsible Fishing and a set of guidelines on how such a system could be put into practice. The resulting principles and guidelines will be submitted to the FAO Fisheries Committee in March 1995 and subsequently to the Conference on Responsible Fishing in November 1995 for formal approval.

The Industrial Training Program in Responsible Fishing, then, is a natural outcome of all that has gone before, including efforts by the Department of Fisheries and Oceans to professionalize the fishery. It is the next logical step to creating the kind of climate in the fishing industry which will foster the changes required if we are to achieve sustainable development.

Results emerging from this body of work have been shared with the fishing industry using project reports, videos and workshops. These have proven effective ... up to a point. But it became obvious that more would be required than the simple sharing of information. Only something more formal, longer-term and person-to-person would ultimately educate and motivate people in the industry to change to the extent necessary to secure the future.

Improvements in selective fishing gears and conservation harvesting methods developed by DFO have, in the past, sometimes not been taken up by fishermen without the imposition of regulations and/or conditions of

ice. As we move into a period of partnership and shared responsibility in the Atlantic fishery, the need to sensitize and educate fishermen and young people about to enter the fishery has become more acute. Together, we are now perhaps for the first time, poised to address the issue directly with a clear plan of action, a significant element of which is an Industrial Training Program in Responsible Fishing for Atlantic Canada.

MODULES OUTLINES

MODULES OUTLINES

Objective: To review the overall plan of the program

DURATION**TOPIC****RESOURCE**

40 min.

Introduction to the program, class introductions, expectations, "housekeeping" information: learning approach to be used.

The course outline

Program Outline manual
handout #1

P.O. 1, 2

MODULE I

In this module the students will review the historical development of industrial fishing, the current issues and the concepts of responsible fishing.

1.0 INTRODUCTION

1.1 Statement of Problem

1.2 The Module

1.2.1 Objective

1.2.2 Aims

1.2.3 Content

2.0 HISTORICAL PERSPECTIVE: New Brunswick and Gulf of St. Lawrence Fisheries

2.1 The Pre-War period

2.2 The Post-War period

3.0 CANADIAN PERSPECTIVE

3.1 Issues and Problems

3.2 Selectivity

3.3 Responsible Fishing

3.4 Responsible Fishing Program

3.5 Fishing Gear Manual

3.6 Aims of Responsible Fishing

4.0 CANADIAN RESPONSIBLE FISHING INITIATIVES

4.1 Eastern Canada

4.1.1 Review of Fishing Gear and Technology in Atlantic Canada

4.1.2 The Northern Shrimp Selectivity Program

4.1.3 The Cod Separation Experiment

4.1.4 Newfoundland Cod Trap Selectivity

4.1.5 Lastridge Rope Selectivity Programs

4.1.6 Atlantic Fisheries Technical Workshop on Conservation, Harvesting & Technologies

4.2 Central Canada

4.2.1 Great Lakes Commercial Fisheries - Gear Selectivity

4.2.2 Lake Erie Selectivity Trials

4.3 Arctic Canada

- 4.3.1 Vessels and Technology Transfer
- 4.3.2 Small Fisheries Vessel Development
- 4.3.3 Training Program for Great Slave Lake Fishers
- 4.3.4 Keewatin Fisheries Training Needs Assessment History

4.4 Western Canada

- 4.4.1 Pacific Commercial Fisheries: Gear Selectivity and New Technology
- 4.4.2 Trawl Fisheries
- 4.4.3 Shellfish Fishery
- 4.4.4 Energy Efficiency

4.5 Pro Fisher Program

4.6 Global Commitment

- 4.6.1 The 1994 International Expert Consultation on a Code of Conduct for Responsible Fishing Operations
- 4.6.2 The 1994 NATO Advanced Research Workshop: Deep Water Fisheries of the North Atlantic Oceanic Slope
- 4.6.3 The 1994 United Nations Conference on High Seas Fishing
- 4.6.4 International Energy Agency: 1993 Fishing Vessel Energy Efficiency Meeting
- 4.6.5 Selectivity in Towed Gears for Fishers in the Atlantic Coast Member States
- 4.6.6 The Declaration of Cancun:
An International Conference on Responsible Fishing

5.0 INTERNATIONAL PERSPECTIVE

5.1 Background

5.2 Fishing Operations

- 5.2.1 Introduction
- 5.2.3 Project Description
- 5.2.4 Principles and Guidelines
- 5.2.5 Responsible Fishing Gear/Selectivity
- 5.2.6 Energy Optimization

MODULE II

This module will give the participants basic biological knowledge of local species harvested and relate this knowledge to an understanding of responsible fishing.

1.0 INTRODUCTION

2.0 FOOD CHAIN

3.0 HABITAT

4.0 OCEANOGRAPHY OF THE REGION

4.1 Gulf of St. Lawrence

5.0 FISH GROWTH AND DEVELOPMENT

5.1 Cod

- 5.1.1 Spawning**
- 5.1.2 Reproduction**
- 5.1.3 Growth**
- 5.1.4 Feeding**

5.2 Growth and Development - Atlantic Herring

- 5.2.1 Spawning**
- 5.2.2 Reproduction**
- 5.2.3 Growth**
- 5.2.4 Feeding**
- 5.2.5 Predators**

6.0 GROWTH AND DEVELOPMENT - SHELL FISH

6.1 Snow Crab

- 6.1.1 Introduction**
- 6.1.2 Biology and Harvesting**
- 6.1.3 Distribution**
- 6.1.4 Stock Recruitment**
- 6.1.5 Early Development**
- 6.1.6 Growth**
- 6.1.7 Moulting Seasons**
- 6.1.8 Frequency of Moulting**

6.1.9 Reproduction**6.1.10 Moulting-Harvesting Questions****6.2 Northern Shrimp****6.2.1 Introduction****6.2.2 Distribution****6.2.3 Temperature****6.2.4 Reproduction****6.2.5 Mating****6.2.6 Spawning****6.2.7 Embryonic phase****6.2.8 Larval phases****6.2.9 Growth****6.2.10 Adolescent phases****6.2.11 Adult phase - Longevity****6.2.12 Hardiness****6.2.13 Nutrition and Growth - Feeding****6.2.14 Food****6.2.15 Growth and Morphometry****6.2.16 Natality and Recruitment - Reproduction rates****6.2.17 Mortality rates****6.3 LOBSTER****6.3.1 Introduction****6.3.2 Distribution****6.3.3 Early Development****6.3.4 Maturity****6.3.5 Reproduction****6.3.6 Natural Mortality****6.3.7 Movement****6.3.8 Research and Management****7.0 FISH BEHAVIOUR****8.0 CARE OF THE CATCH****8.1 What causes Decomposition****8.1.1 Bacteria and Seafood****8.1.2 Bacteria****8.1.3 Bacterial Growth****8.1.4 Problems Caused by Bacteria****9.0 VESSEL CLEANING**

9.1 Detergents

MODULE III

To better understand the relationship between fisheries management and responsible fishing.

1.0 FISHERIES MANAGEMENT

1.1 Philosophy and intent of Fisheries Management

2.0 SCIENTIFIC ASPECTS OF FISHERIES MANAGEMENT

2.1 Research

2.2 Stock Assessment

2.3 Establishment of total Allowable Catches (TACs)

3.0 THE LEGISLATIVE ASPECTS OF FISHERIES MANAGEMENT

3.1 Conservation and Protection of the Resource

3.2 Acts and Regulations

3.3 Monitoring Control and Surveillance

3.4 Enforcement

4.0 OPERATIONAL ASPECTS OF FISHERIES MANAGEMENT

4.1 History of Fisheries Management

4.2 Licensing and Resource allocation

4.3 Industry Consultation

4.4 Management Measures

4.5 Dumping and Discarding

5.0 RESPONSIBLE FISHING AS AN INTEGRAL PART OF FISHERIES MANAGEMENT

MODULE IV

To review existing and developing selective technologies, their purposes and mechanisms.

1.0 INTRODUCTION

2.0 MOBILE GEAR EXPERIMENTS SHRIMP

2.1 Shrimp size selectivity

- 2.1.1 Purpose of selectivity
- 2.1.2 Square mesh codend
- 2.1.3 Mesh size

2.2 Shrimp by-catch selectivity

2.2.1 Nordmore grate, funnel and opening

- 1. Purpose of the study
- 2. Description and installation
- 3. Functioning of components
- 4. Example of results
- 5. Conclusion
- 6. Discussions

2.2.2 Separator panels

2.3 Practical Exercises - Session I

- 2.3.1 Aim of the exercise
- 2.3.2 Instructional Objectives
- 2.3.3 Associated Learning Task
- 2.3.4 Funnel
- 2.3.5 Grid
- 2.3.6 Escape hole
- 2.3.7 Window

3.0 GROUND FISH SIZE AND BY-CATCH SELECTIVITY IN MOBILE GEAR

- 3.1 Purposes
- 3.2 Square Mesh vs Diamond Mesh Experiments

3.2.1 Description

3.2.2 Measurement

3.2.3 Function

3.2.4 Results

1. Mesh Size Experiment
2. Square and Diamond Mesh Experiment
3. Square vs Diamond Mesh Experiment
4. Square Mesh Experiments
5. Redfish Mesh Size Experiment
6. White Hake Mesh Size Experiment

3.3 Lastridge Ropes

3.3.1 Description

3.3.2 Function

3.3.3 Results

3.4 Rigid Grate System

3.4.1 Description

3.4.2 Function

3.4.3 Results

3.5 Panel Trawls

3.6 Discussion

3.7 Practical Exercises - Session II

3.7.1 Aim of the exercise

3.7.2 Instructional objectives

3.7.3 Associated learning task

Session III

3.7.4 Aim of the exercise

3.7.5 Instructional objectives

3.7.6 Associated learning task

4.0 MOBILE GEAR SCALLOP SELECTIVITY

4.1 Purpose

4.2 Description

4.2.1 Scallop Trawl

4.2.2 Scallop Drag (Digby type)

4.3 Function

4.4 Results

5.0 LONGLINE HOOK SELECTIVITY

5.1 The Purpose

5.1.1 Newfoundland Region

5.1.2 Scotia-Fundy Region

5.1.3 Hook Size Study in the Swordfish Longline Fishery

5.2 Description

5.2.1 Newfoundland Region

5.2.2 Scotia-Fundy Region

5.2.3 Hook Size Study in the Swordfish Longline Fishery

5.3 Results

5.3.1 Newfoundland Region

5.3.2 Scotia-Fundy Region

5.3.3 Hook Size Study in the Swordfish Longline Fishery

5.4 Conclusion

6.0 CRAB

6.1 Purpose and Background

6.2 Description

6.2.1 Experiments

6.2.2 Modified Traps

6.3 Results

6.4 Conclusion

6.4.1 Studies - 1991-1992 Projects

6.4.2 Studies - 1991-1992 - Delayed Release

7.0 GILLNETS

7.1 Introduction

7.2 Description

7.3 Results

7.4 Gillnet Selectivity Study

8.0 LOBSTER**8.1 Objectives of Various Management Actions or Tools****8.1.1 Control Management Measures****8.1.2 Protection Management Measures****8.2 Description****9.0 PRACTICAL EXERCISES - Session IV****9.1 Aim of the Exercise****9.2 Instructional Objectives****9.3 Associated Learning Task**

MODULE V

To review selective gear monitoring systems.

1.0 CATCH CONTROL AND GEAR MONITORING

1.1 Introduction

1.1.1 Catch Control

1.1.2 Gear Monitoring

1.2 Definition

1.3 Systems

1.4 Typical Instrumentation of a Trawl

2.0 SENSORS

2.1 Depth Sensor

2.1.1 Uses

2.2 Catch Sensor

2.2.1 Uses

2.3 Tensiometer

2.3.1 Uses

2.4 Temperature Sensor

2.4.1 Uses

2.5 Trawl Eye

2.5.1 Uses

2.6 Trawlspeed Sensor

2.6.1 Uses

2.7 Distance Sensor

2.7.1 Uses

2.8 Height Sensor**2.8.1 Uses****2.9 Grid Sensor****2.9.1 Uses****2.9.2 Information****2.9.3 Angle of Grid****2.9.4 Problems****2.9.5 Advantages****2.9.6 Grid Sensor****3.0 GEAR MONITORING FOR TRAWLERS****3.1 Bottom Gear****3.1.1 The Gear****3.1.2 The Fish****3.1.3 Bottom Trawling****3.2 Pelagic Gear****3.2.1 The Gear****3.2.2 Rip Indicator****3.2.3 Catch Sensors****3.2.4 System Package****3.3 Gear Monitoring for Purse Seiners****3.3.1 Introduction****3.3.2 Sinking Speed****3.3.3 Depth Sensor****3.3.4 Interfacing with Echo Sounder****3.4 Monitoring with Sonar****3.4.1 Automatic Gain Adjustment/System Startup****3.4.2 Screen Explanations**

MODULE VI

To review ghost fishing issues, pollution caused by gear, dumping, other environmental issues and development of the code of conduct.

1.0 INTRODUCTION

- 1.1 Fish Habitat
- 1.2 Ghost Fishing

2.0 GILLNETS

- 2.1 Statement of the problem
- 2.2 Statistics

- 2.2.1 Atlantic Canada
- 2.2.2 Gulf
- 2.2.3 Newfoundland
- 2.2.4 Quebec

- 2.3 Mesh size
- 2.4 Lost gillnets

- 2.4.1 Reasons for loss

2.5 Gillnets Lost/Year

- 2.5.1 Newfoundland
- 2.5.2 Scotia-Fundy Region
- 2.5.3 Gulf Region
- 2.5.4 Quebec Region

- 2.6 An approximate estimate of lost quantity and value of fish due to ghosting in Atlantic Canada
- 2.7 Mammals and seabirds

- 2.7.1 Whales
- 2.7.2 Porpoises
- 2.7.3 Seals

3.0 TRAPS

- 3.1 Crab pots
 - 3.1.1 Galvanic time release as escape mechanism for crab pots

4.0 OPTIONS FOR REDUCING GHOST FISHING**4.1 Corrective Actions**

- 4.1.1 Possible Industry/Government Strategies
- 4.1.2 Clean-Up
- 4.1.3 Controls and Regulations
- 4.1.4 Technical Improvements
- 4.1.5 Research into Ghosting and Impacts

5.0 DEALING WITH THE MARINE DEBRIS PROBLEMS

- 5.1 Dumping and Discarding Fish
- 5.2 Lost fishing gear
- 5.3 Dumping of Unwanted or Damaged Gear

- 5.3.1 Reasons for Dumping
- 5.3.2 Effects
- 5.3.3 Alternatives
- 5.3.4 Possible Actions

6.0 INITIATIVES TAKEN

- 6.1 Nova Scotia: Public Education
- 6.2 Gulf Region

- 6.2.1 Consultations
- 6.2.2 Suggested Projects

6.3 Quebec Region

- 6.3.1 Consultations
- 6.3.2 Areas identified
- 6.3.3 Priorities

6.4 Newfoundland Region

- 6.4.1 Effects of Ghosting Gillnets
- 6.4.2 Proposed Action

6.5 Canadian Wildlife Service, Environment Canada

6.5.1 Consultations**6.6 Fishermen's Food and Allied Workers Union****6.6.1 Consultations****6.6.2 Background Statistics****6.6.3 Changing Trend****6.7 Fishery Products International****6.7.1 Consultations****6.7.2 Gill Net Ghosting****6.7.3 Possible Solutions****6.8 IMP****6.9 Bay Bulls Trading****6.10 Mercers Marine Equipment****6.11 Aquaprojects Inc.****7.0 OTHER ENVIRONMENTAL ISSUES****7.1 Seabed and habitat damage****7.1.1 Fishing Gear****7.1.2 Otter Trawls****7.1.3 Scottish/Danish Seines****8.0 GEAR MARKING****8.1 Introduction****8.1.1 Examples of Tags and Marks****8.1.2 Suggested location of marks in relation to gear type****8.1.3 General recommendations for the marking of towed nets**

- a) Wing end
- b) Lower pane
- c) Cod - end

9.0 LEGISLATION**9.1 Fish Habitat Management Policy**

RESPONSIBLE FISHING

PROGRAM OUTLINE

DFO - FISHING INDUSTRY SERVICES

MPO - SERVICES À L'INDUSTRIE DE LA PÊCHE

- *Fishing Gear Selectivity Program Atlantic Canada, 1991-1992*
- *Programme de sélectivité des engins de pêche, Canada Atlantique, 1991-1992*

DFO - FISHING INDUSTRY SERVICES

MPO - SERVICES À L'INDUSTRIE DE LA PÊCHE

- *Fishing Gear Selectivity Program Atlantic Canada, 1992-1993*
- *Programme de sélectivité des engins de pêche, Canada Atlantique, 1992-1993*

DFO - FISHING INDUSTRY SERVICES

MPO - SERVICES À L'INDUSTRIE DE LA PÊCHE

- *The Canadian Program For Responsible Fishing, 1994*
- *Programme Canadien pour la pratique responsable de la pêche, 1994*

DFO - FISHING INDUSTRY SERVICES

- *The Canadian Report (Of the 1994 FAO International Expert Consultation for the Code of Conduct for Responsible Fishing) June 6-11, 1994 - Sidney (BC)*

DFO - FISHING INDUSTRY SERVICES

MPO - SERVICES À L'INDUSTRIE DE LA PÊCHE

- *Atlantic Bluefin Tuna Fishery Management Plan, 1994*
- *Plan de gestion du thon rouge de l'Atlantique, 1994*

DFO - FISHING INDUSTRY SERVICES**MPO - SERVICES À L'INDUSTRIE DE LA PÊCHE**

- *Canadian Fish Harvesting Program for Responsible Fishing, 1992*
- *Programme Canadien de récolte du poisson pour une pratique rationnelle de la pêche, 1992*

CANADIAN FISHERY CONSULTANTS LIMITED (Halifax, Nova Scotia)

- *Review of Fishing Gear and Harvesting Technology in Atlantic Canada (Fishing Gear and Harvesting Technology Assessment), March 1994*
- *Évaluation des engins de pêche et des technologies d'exploitation utilisés au Canada Atlantique, Mars 1994*

AQUAPROJECTS INC., (St. John's, NFLD)

- *Review of Fishing Gear and Harvesting Technology in Atlantic Canada (Executive Summary and Work Plan), November 1993*

MPO - SERVICES À L'INDUSTRIE DE LA PÊCHE

- *Atelier technique des pêches de l'Atlantique sur les techniques d'exploitation axées sur la conservation, Avril 1994*

DEPARTMENT OF FISHERIES AND OCEANS (DFO) - MINISTÈRE DES PÊCHES ET DES OCÉANS (MPO)

- *Policy for the Management of Fish Habitat, October 7, 1986*
- *Summary, revised 1990*
- *Politique de gestion de l'habitat du poisson, 7 octobre 1986*
- *Résumé, révisé 1990*

DEPARTMENT OF FISHERIES AND OCEANS (DFO)

- *Fish Habitat (The Foundation of Canada's Fisheries, 1987)*

DFO -COMMUNICATIONS DIRECTORATE, Ottawa (Ontario)**MPO - DIRECTION GÉNÉRALE DES COMMUNICATIONS, Ottawa (Ontario)**

- *Canada's fish Habitat Law, 1991*
- *La Loi et l'Habitat du poisson au Canada, 1991*

DFO -COMMUNICATIONS DIRECTORATE, Ottawa (Ontario)**MPO - DIRECTION GÉNÉRALE DES COMMUNICATIONS, Ottawa (Ontario)**

- *Fishing Habitat and Mining, 1988*
- *L'Habitat du poisson et l'exploitation minière, 1988*
- *Fish Habitat and Dredging, 1985*
- *L'Habitat du poisson et le dragage, 1985*
- *Fish Habitat Conserving our Hidden Assets, 1987*
- *L'Habitat du poisson protégeons cet héritage chaché, 1987*
- *Fish Habitat and Forestry, 1985*
- *L'Habitat du poisson et l'exploitation forestière, 1985*

DFO -COMMUNICATIONS DIRECTORATE, Ottawa (Ontario)**MPO - DIRECTION GÉNÉRALE DES COMMUNICATIONS, Ottawa (Ontario)**

- *DFO Factbook, 1989*
- *Coup d'oeil sur le MPO, 1989*
- *Today's Atlantic Fisheries, 1989*
- *Les pêches de l'Atlantique, 1989*

RESPONSIBLE FISHING

PROGRAM OUTLINE

NORTHERN SHRIMP INDUSTRY ASSOCIATION - FISHING INDUSTRY SERVICES - DFO

- *1993 Northern Shrimp Selectivity workshop, August 1993*

RESOURCE MANAGEMENT BRANCH, QUEBEC REGION, DFO - Marcel Boudreau, Senior Advisor

- *Industrial Shrimp By-catch Selectivity Experiment, "M.V. AQVIQ", July 6-7, 1993*

SCANTEC LIMITED, Dartmouth (NS)

- *Codend Mesh Size Experiment conducted on the M/V "Northern Osprey" (Executive Summary and Report), July 1993*

RESPONSIBLE FISHING PROGRAM FOR FISHERY OFFICERS



NEW BRUNSWICK
SCHOOL OF FISHERIES
CARAQUET
1999

PROGRAM OUTLINE

Fishery officers pilot course on
Responsible Fishing

Objectives : To create an understanding of the issues facing fishery officers and, through knowledge of, responsible fishing gear and practices, to ensure that participants obtain optimum competency in those subject areas required for the conservation and protection of the fishery.

Results : At the end of the course the fishery officer will have the most up to date knowledge in responsible fishing as practiced in the commercial sector by :

- understanding the concept of responsible fishing (E.G. Code of Conduct)
- identifying the different gears and related components by on site observations
- inspecting gear and identifying specific fishing gear irregularities and provide solutions
- making the link within the regulation and conditions of license
- detecting possible infractions

Program Outline: The 5 day pilot training program at the New Brunswick School of Fisheries in Caraquet, New Brunswick will be delivered in French and will consist of the following:

Module 1

Historical background of commercial fisheries, the current issues and the concepts of responsible fishing.

- Historical perspective
- Canadian perspective
- International perspective
- Codes of Conduct

Module 2

Basic biological knowledge of local species harvested and relate this knowledge to an understanding of responsible fishing.

- Oceanography of the Gulf of St. Lawrence
- Habitat, migration and behavior of each species
- Traditional and new selective fishing gear

Module 3

Existing and developing selective harvesting technologies and gear monitoring systems.

- Selective gear by type and category
- Catch control and gear monitoring systems
- Full scale and models of fishing gear demonstrations within a practical workshop
- Electronic simulation of fishing operations

Module 4

Ghost fishing issues, pollution caused by gear, dumping and discarding of fish at sea and other environmental issues.

- Fishing Gear (Gillnets/Traps etc.)
- Options for reducing ghost fishing
- Dealing with the marine debris problems
- Legislation
- Technological solutions
- Other environmental issues

Module 5

Relationship between fisheries management, science and responsible fishing.

- Scientific input
- The legislative and operational aspects
- Responsible fishing as an integral part of the fisheries

Module 6

Law enforcement

- Awareness of conservation issues (Technology evolution)
- Exchange experience with peers
- Knowledge of gear categories (size etc.) and species directed
- Ability to identify gear components including inspections
- Detect violations (workshop)

Industrial Training Program

Canadian Responsible Fishing



MARINE INSTITUTE

Industrial Training Program

Canadian Responsible Fishing



MARINE INSTITUTE

CANADIAN RESPONSIBLE FISHING INDUSTRY TRAINING PROGRAM

"The Challenge that lies ahead in most fisheries of the world is for fisheries administrations to move into a new era of cooperation between government and industry. The partnership must be real and extend to all facets of fisheries management including scientific and technical research, regulation, enforcement, inspection, marketing and education. Direct industry participation should lead to a sense of ownership which will foster a greater sense of responsibility."

*FAO International Expert Consultation
Document on Responsible Fishing Practices*

This program provides a foundation in the principles and guidelines expressed of the Canadian Code of Conduct for Responsible Fishing Operations.

* * *

[ACKNOWLEDGEMENT: Fisheries and Oceans Canada (Fisheries Management Branch) has made a significant contribution to this program. Their technical guidance, advice and partial financial support for development and pilot delivery have helped to successfully launch this initiative.]

INTRODUCTION

Inspired by guidelines for the Canadian Program for Responsible Fishing and by the Canadian Code of Conduct for Responsible Fishing Operations, the Fisheries and Marine Institute of Memorial University of Newfoundland has developed a new industry responsive and flexible **Canadian Responsible Fishing Industrial Training Program**. The course is designed to enhance the participants' knowledge in the application and overall determining factors that make up a responsible fishing operation.

This program includes up-to-date material suitable for experienced harvesters. It also deals with many of the basic and fundamental issues and practices, and provides an excellent grounding in responsible fishing for less experienced industry personnel.

To help guide our program development process, the Marine Institute conducted industry consultations with skippers and crews on the Avalon and Northern Peninsulas of the province. Our educational design reflects their feedback and recognizes that many participants come to this program with an enormous amount of real life experience. The fish harvesters indicated a preference for a course of two to three weeks duration. They also requested that the theoretical modules of the program be delivered in or near their local communities. This community-based training approach should, ideally, also be supplemented with a practical "hands-on" week of training in the Flume Tank of the Marine Institute in St. John's.

The consultations showed that inshore harvesters are most anxious to discuss and learn more about ecological and environmentally safe fishing methods, and other principles of a

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sustainable fishery. Since most now fish for multiple species, those consulted advised that the program should be flexible by adaptation of the content to the particular gear and species fished in their respective sectors and/or geographical locations. There was great interest in using responsible fishing methods for cod, shrimp, turbot, crab, flounder and capelin, while there was some interest in other species recorded. Industry also noted that the best time for delivery of this course for active fish harvesters is in the late fall and early winter, when fewer of them are actually on the water.

It was strongly recommended that at least 40 per cent of the program be taught by application, demonstration, and activities carried out in the Flume Tank, while the remainder could be more theory-based.

OVERVIEW OF THE COURSE

Much of the initial development work for this program was carried out by the New Brunswick School of Fisheries of Caraquet: a partner organization with the Marine Institute. While the context of the program is international in scope, the particular focus of this offering is Atlantic Canada.

This course begins with an overview of world and Canadian fisheries. It addresses the evolution of fishing gear technologies, the methods used in commercial fisheries, and how fishing gear is classified. Participants learn which are the world's major fishing nations, what they catch, where they fish, what species each nation takes and what demand there is for production and marketing of predominant world species.

The course continues with a discussion of the growth of the world fishery from artisanal to commercial developments, and identifies the challenges facing modern fisheries.

Early in the program participants examine the United Nations' Food and Agriculture Organization's Code of Conduct for Responsible Fisheries, and the Canadian Program and Code of Conduct for Responsible Fishing Operations.

Fishing gear design and harvesting operations' relationship to Responsible Fishing is the next major topic covered in the program. Participants study fishing gear materials including their basic physical properties, filaments and twines, breaking loads, mesh size, elongations, shrinkage factors, knot influences, and the like. The fishing operational discussion continues with emphasis on factors such as hydrostatic and gravitational forces; hydrodynamics and friction; the criteria for determining gear mesh sizes; relationships between gear types and vessel size;

ground conditions; vessel power implications; and the impact of species' migration and aggregations on fishing operations.


With the help of modelling and use of the Flume Tank, participants develop an understanding of these construction properties of gear as related to Responsible Fishing. This also includes viewing the operations of mobile gear such as beam trawls, twin trawls, cod selectivity trawls and various designs of bottom trawls. In the case of fixed gear, square mesh trap performance and the influence of water current speeds and direction on gillnets and longlines are demonstrated.

Catch handling and product quality concerns are then examined, emphasizing the importance of high quality, care of the catch aboard and activities up to and including dockside monitoring.

Energy conservation is then evaluated from the viewpoint of fishing efficiency, fuel consumption and applicable conservation initiatives.

Fishing gear monitoring and fishing electronics are demonstrated in the Flume Tank. Harvesters learn to identify and use the various types of fish finding equipment and then discuss gear and vessel monitoring equipment as well as surveillance and relocation techniques.

The important Northwest Atlantic ecosystem is described, followed by participants discussing the concept of ecosystems, biology, and oceanography, and their general implications for fisheries management.




Course participants then explore particular biology of several commercial fish species. This section of the course focuses on the species that participants harvest, with the content changing from course to course. This flexibility allows the learners to increase their biological knowledge of cod, turbot, shrimp, flatfishes, capelin, herring, snow crab and lobster. Other species are added, as required.

The behavior of fish is of great interest and value to fish harvesters. Subjects discussed include fish senses and sensory capacities, as well as schooling behaviours, reaction to netting, and the impact of the environment on fish behavior. Fish behaviour is discussed and demonstrated in relation to active and passive gear-types.

Of major importance is the course is the matter of gear selectivity. The participants study data from selectivity experiments and demonstrate the principles of gear selectivity in relation to many gear types including trawls, seines, pots, traps, gillnets, longlines and dredges. Various designs, plus use of integrated and add-on selectivity devices are demonstrated in the flume tank.

The natural progression from selectivity leads participants to estimating and reducing by-catch fishing mortalities by various species and gear types. This discussion includes determining the mortality of escaped fish, estimating post-selection mortality of selected gear, by-catch reduction techniques and reduction of unreported catch.

The impact of various gear types on the seabed and benthic organisms, and reduction of damage is discussed, while the importance of spawning stocks is covered. The behavior patterns of several species prior to spawning, and the findings of various experiments with gear types of spawning stocks are assessed.



Ghost-fishing is defined, followed by an examination on its implications for fisheries management. Topics covered include prevention strategies, retrieval methods and gear return incentive schemes. A discussion of the sources and reduction strategies for marine debris is followed by consideration of avoidance of by-catch of sea birds, turtles and marine mammals.

The course continues with in-depth consideration of the philosophy and principles of fisheries management, exploration of the basic aspects of stock assessment and the operational principles of fisheries management. These topics include discussion on such important issues as management effects on northern cod and North Sea herring stocks, stewardship of the sea, biological management, how stocks are assessed, data management, and how TACs are established.

Finally, the course stresses the importance of industry participation in stock assessment and fisheries management. It concludes with a discussion on responsible fishery operations as an integral part of fisheries management.

Course Syllabus

COURSE AIMS AND MAJOR TOPICS

DURATION: 10 DAYS

METHOD OF INSTRUCTION:

60% Theoretical, Lecture and Discussion

40% Application, Demonstration and Activity

COURSE AIMS:

This program is designed to enhance the participant's knowledge in the application and overall determining factors that make up a responsible fishing operation. Upon completion, the participant will:

1. Be versed regarding the historical and recent initiatives in the area of responsible fishing.
2. Gain an understanding of biomass managing techniques of fisheries and their impact on fisheries resources.
3. Be knowledgeable in the application of proven selectivity techniques as well as exploration of new ideas.
4. Be provided with an overall understanding of fish behaviour and fish biology, and how these can impact responsible harvesting operations.
5. Appreciate and have a particular focus as to the factors influencing the ocean environment during fishing activity.

MODULE TOPICS:

1. **Responsible Fisheries: Historical Perspective and New Initiatives**
2. **Fishing Gear Design and Harvesting Operation as Related to Responsible Fisheries (Flume Tank)**
3. **Fish Biology and Behaviour as Related to Responsible Fisheries**
4. **Fishing Gear Selectivity (Flume Tank)**
5. **Estimating and Reducing Fishing Mortalities**
6. **Impact of Fishing on the Resource and the Environment**
7. **Fisheries Management**

COURSE OUTLINE

- 1. Responsible Fisheries: Historical Perspective and New Initiatives**
 - World and Canadian Fisheries Overview
 - Development of Fishing Gear, Methods and Commercial Fisheries
 - Fishing Gear Classification
 - Introduction to the FAO and Canadian Codes of Responsible Fisheries
- 2. Fishing Gear Design and Harvesting Operation as Related to Responsible Fisheries (Flume Tank)***
 - Fishing Gear Material
 - Fishing Operation Factors
 - Overview of Some Construction Properties Related to Responsible Fishing
 - Catch Handling and Product Quality
 - Fishing Efficiency and Energy Conservation
 - Fishing Gear Monitoring and Fishing Electronics
- 3. Fish Biology and Behaviour as Related to Responsible Fisheries**
 - Northwest Atlantic as an Ecosystem
 - Biology of Some Commercial Fish and Shellfish Species
 - Fundamental Aspects of Fish Behaviour
 - Fish Behaviour Near Fishing Gears
- 4. Fishing Gear Selectivity (Flume Tank)***
 - Fishing Gear Selectivity: Concepts and Practices**
 - Fishing Gear Selection Principles
 - Fishing Gear Selectivity Designs and Devices**

5. Estimating and Reducing Fishing Mortalities

- Source and Composition of Fishing Mortalities
- Level of Mortality in Different Fisheries and Gear Types
- Fishing Mortality Reduction

6. Impact of Fishing on the Resource and the Environment

- Impact on Seabed and Benthic Organisms
- Impact on the Spawning Stocks
- Ghost fishing Problems and Prevention
- Marine Debris
- By-Catch of Sea Birds, Turtles and Marine Mammals

7. Fisheries Management

- Philosophy and Principles of Fisheries Management
- Principles and Basic Aspects of Stock Assessment
- Operational Aspects in Fisheries Management
- Industry Participation in Stock Assessment and Fisheries Management
- Responsible Fisheries Program as an Integral Part in Fisheries Management

** "Flume Tank" means all facilities as required that are available at the Fishing Technology Unit.*

*** This section has a generic selectivity approach that encompasses all fishing gears. However the focus of this section can vary to suit the fishing operation needs of clients.*

COURSE DELIVERY INFORMATION

1. *Full Delivery at the Institute:*

This course will have its maximum impact on participants when the entire delivery takes place on campus at the Marine Institute. This is due to the facilities at the Institute, in particular the applications made in the Flume Tank where participants can work with actual models of most common and new gear types and net configurations.

2. *Partial Delivery at the Institute*

The next most effective delivery is when part of the course is field delivered, and supplemented by a week at the Marine Institute. Some practical work may be done on participants' gear and vessels.

3. *Entire Delivery in the Community*

A very effective course can be delivered entirely in the field, using a number of instructors and very well developed audio-visual material, including videos of both the experiments in the Flume Tank and actual underwater footage. Some practical work may be done with participants' gear and vessels.

4. *Delivery by Distance Education Technology*

The institute is developing a correspondence package for this course that will include hard copy student manuals, video tapes and interactive learning processes with Instructors at the marine Institute though use of the Internet.

COST OF COURSE

Cost is determined by which of the four above delivery methods is selected and the duration of the course as required by the client. For a cost estimate of your course, please contact the Marine Institute with the details of your requirements. (Contact information is on the back cover of this publication.)

RESPONSIBLE FISHERIES TRAINING PROGRAM for ATLANTIC FISHING INDUSTRY

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- Module 5: Estimating and Reducing Unaccounted Fishing Mortalities**
- Module 6: Impact of Fishing on the Resource and the Environment**
- Module 7: Fisheries Management**

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MODULE ONE

Responsible Fisheries: Historical Perspective and Recent Initiatives

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FISHERIES RESOURCE MANAGEMENT

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Education:

Professional Fish Harvester - Level I

Apprentice Fish Harvesters will be granted Professional Fish Harvester Level I status after attaining the following:

- Must accumulate a minimum of 100 sea days and;
- Must have a minimum of two years of full-time fishing activity and;
- Must earn 55 land-based credits in addition to the five (5) credits for the Basic Safety course required for all new entrants.

Courses include:

Introduction to Navigation & Safety Fish Handling
General Maintenance Fishing Methods
Optional Courses

Education:

Professional Fish Harvester - Level II

Individuals in the Professional Fish Harvester - Level I category will be granted the designation Professional Fish Harvester - Level II after attaining the following:

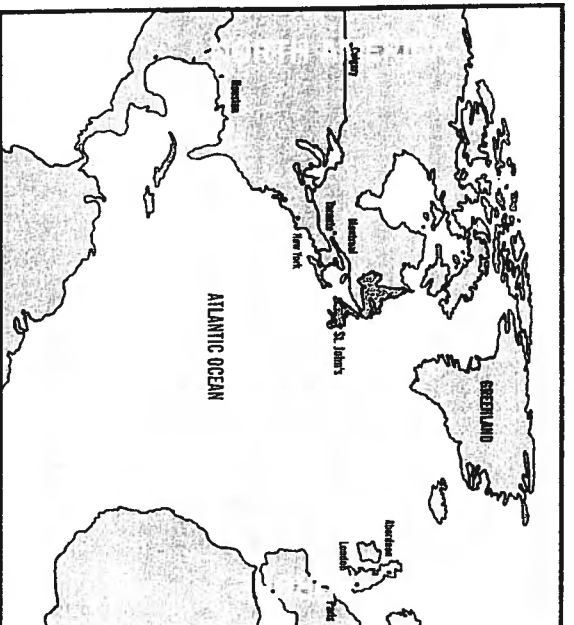
- Must accumulate a minimum of an additional 200 sea days over the Professional Fish Harvester Level I criteria and;
- Must complete a minimum of an additional three years of full-time fishing activity over the Professional Fish Harvester Level I criteria and;
- Must accumulate an additional 60 land-based credits over the Professional Fish Harvester Level I criteria.

Courses include:

Managing Your Fishing Enterprise Fish Technology
Gear or Vessel Maintenance Stability
Optional Courses

All courses must be approved by the Certification Board.

The Certification Board may consider equivalent course requirements in addition to the above for certification levels. The Board may also provide credits for courses completed in other marine related fields, or consider acceptable course combinations for the different levels.



For more information contact:

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Professional Fish Harvesters Certification Board
Newfoundland & Labrador
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P.O. Box 8392
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Professional Fish Harvesters

Certification Board

Newfoundland & Labrador

Background on the Board

The Professional Fish Harvesters Certification Board is a non-profit organization which originated from a meeting held at the Marine Institute in 1990 by the Inshore Council of the Fish, Food & Allied Worker's. At this meeting a model for certification was presented, and following this the idea of professionalization was discussed at several seminars where it gained support of Fishery Co-Operatives, FFAW, HRD, DFFA, and DFO. During 1994 over 250 community meetings were held throughout the province to discuss professionalization and certification. In excess of 5000 harvesters attended these meetings and there was over 90 percent acceptance of the professionalization program. Seven years after the initial meeting the Professional Fish Harvesters Certification Board became operational in January of 1997.

Composition of the Board

The Board consists of 15 members, appointed by the Newfoundland and Labrador Minister of Fisheries. Board members are appointed for three year terms and are eligible for reappointment. The Board members consist of:

- Seven representatives of the organization that has been recognized by the Labour Relations Board as representing fish harvesting in collective bargaining;
- One representative from the Association of Newfoundland and Labrador Fisheries Co-Operatives;
- One representative of the Department of Fisheries and Aquaculture;
- One representative of the Department of Education;
- Two representatives of the Department of Fisheries and Oceans;
- One representative of Human Resources Development Canada;
- One representative of a post-secondary education training institution; and
- One representative-at-large chosen by the minister.

Members are chosen in a manner which ensures that all areas of the province and the different fleet sectors are represented on the board.

Objectives of the Board

- to promote the interest of fish harvesters as a professional group;
- to operate and maintain a fish harvester registration system;
- to develop, evaluate and recommend courses under the professionalization program;
- to be responsible for defining the standards for professionalization;
- to issue certificates of accreditation to qualifying fish harvesters;
- to provide an independent appeals procedure for fish harvesters;
- to develop, maintain and monitor compliance of a Code of Ethics;
- to apply sanctions against fish harvesters who violate the Board's Code of Ethics; and
- to provide an advisory role to the federal and provincial governments in the formation of fisheries policies consistent with the common good of fish harvesters.

What is Professionalization?

Professionalization means recognizing the special skills and experience required to become a Professional Fish Harvester. Professionalization involves bestowing professional status on fish harvesters who have a long-term attachment to fishing and setting qualifying standards for new entrants.

Why is Professionalization Important?

It will identify and recognize the key, bona fide, full-time, harvesters with attachment to and investment in the fishery. The primary advantage of having fishing recognized as a career is to provide stability and recognition to harvesters as they pass standardized levels of training and experience. Professionalization is the first step in securing the harvesters role in the fishery of the future. Professional Fish Harvesters will have to play a greater role in the management of the fishing industry.

How will Professionalization Work?

Existing fish harvesters will be "grandparented" to the appropriate levels during 1997. The grandparenting process is based on a fish harvesters historic attachment (number of years of full time fishing) to the fishery and his/her dependence on the industry (fishing income during the season). New entrants will complete a certified apprenticeship program under the sponsorship of a recognized professional skipper.

Three categories or levels under the certification system



Grandparenting Criteria

DESIGNATION	HISTORIC ATTACHMENT	DEPENDENCE
Professional Fish Harvester Level II	Seven (7) years full-time fishing experience	Had at least 75% earned income from fishing (during the season) and received at least \$3,000 personal fishing income in three (3) of the last four (4) years during his/her qualifying period;
Professional Fish Harvester Level I	Five (5) years full-time fishing experience	Had at least 75% earned income from fishing (during the season) and received at least \$3,000 personal fishing income in three (3) of the last four (4) years during his/her qualifying period.
Apprentice Fish Harvester	Less than five (5) years full-time fishing experience	All need a sponsor All will take formal courses All will need sea days with a Professional Fish Harvester

MARINE INSTITUTE COURSES

SAFETY

1. Lifeline (5)
2. Introduction to Navigation and Safety (10)
3. Fishing Vessel Stability (10)
4. Small Boat Safety (3)
5. Marine Emergency Duties (A2) (4)
6. Basic First Aid (1)
7. Radiotelephone Operator Restricted (Voluntary) (5)
8. Chartwork (15)
9. Meteorology (5)

MANAGEMENT

10. Fish Handling (10)
11. Managing Your Fishing Enterprise (10)
12. Income Tax (3)
13. Record Keeping for Fishermen (5)
14. Business Communication (10)
15. Practical Mathematics (5)
16. Fisheries Resource Management (5)
17. Fisheries Oceanography
18. Ecology and Environmental Issues (5)
19. Local Committee Leadership (5)
20. Regional Committee Leadership (5)
21. Provincial Council Leadership (10)
22. Instructor's Training Course (CAW) (15)
23. Effect Instruction (5)

FISHING TECHNIQUES

24. Fishing Methods (10)
25. Trap Fishing (5)
26. Gillnetting (5)
27. Hook & Line Fishing (5)
28. Longline Fishing (5)
29. Jigging Reel Fishing (5)
30. Pot Fishing (5)
31. Eel Fishing (5)
32. Fish Detection (10)
33. Fish Finding with Sonar (5)

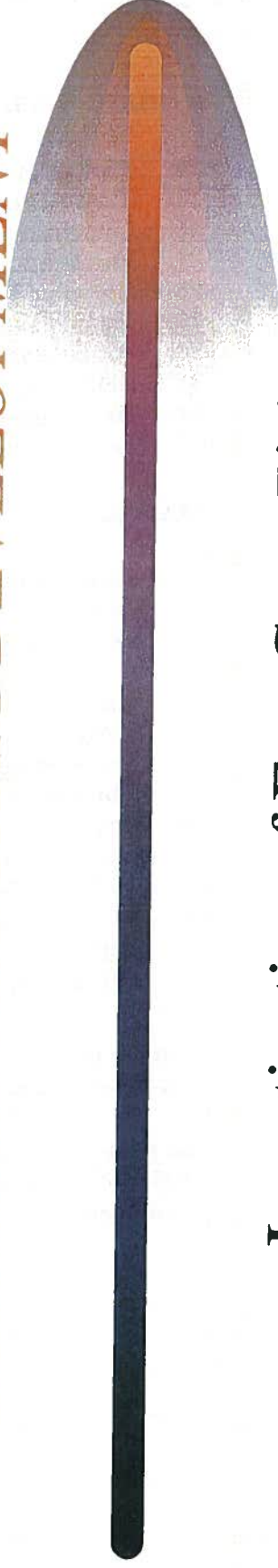
MAINTENANCE AND REPAIR

34. Diesel Engine, Hydraulic System Repair and Layup Maintenance (10)
35. Small Engine Repair & Maintenance (10)
36. Marine Engine Repair & Maintenance (10)
37. Arc Welding & Gas Cutting (20)
38. Fibreglass Boat Repair (10)
39. Fibreglass Sheathing of Wooden Boats (10)
40. Cod Trap Construction & Repair (10)
41. Basic Netmaking and Repair (10)
42. Engineering Knowledge I (10)
43. Engineering Knowledge II (10)

Number in brackets () indicates number of land-based education credits.


The professionalization program would consist of a total of 43 courses and 321 land-based credits.

*INDUSTRY & DEPARTMENTAL
RESPONSIBLE & SELECTIVE FISHING
TRAINING PROGRAM DEVELOPMENT*



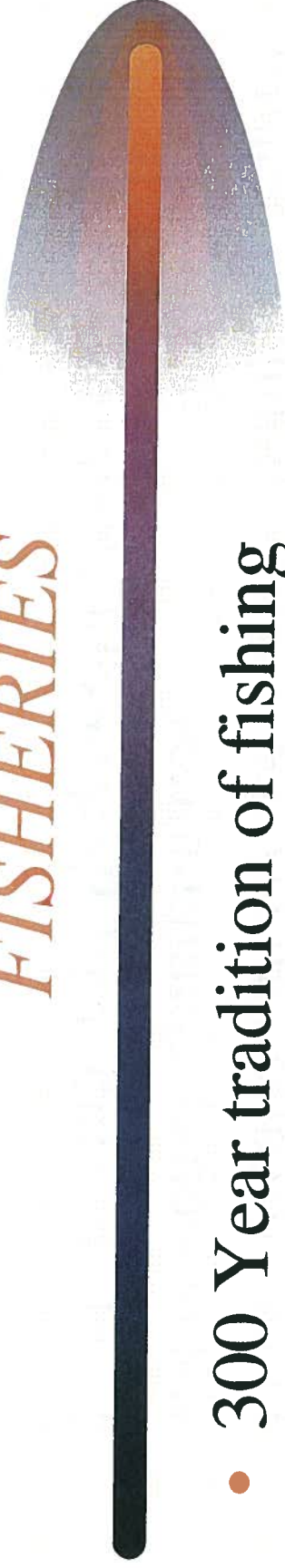
Investigation of East Coast Fishery
Training for Applicability and use on the
West Coast for Fishermen, Fishery
Officers & Managers

PARTICIPANTS

- 
- Bob Rezanoff
 - Les Rombough
 - Ron Parke
 - Christine Hunt
 - Merrill Fearon
 - Ed Thorburn
 - Gordon Curry
 - Andrew Duthie




CARAQUET, N.B. SCHOOL OF FISHERIES



- 300 Year tradition of fishing
- Maintain a competitive edge
- School established in 1959
- Training in navigation, marine engineering, fishing gear, fishing techniques, safety, aquaculture, vessel repair & product quality

ATLANTIC CANADA FISHERY

CONTEXT

- 
- Fisheries decline & collapse in early 90's
 - Attitudes change re: conservation & management
 - Most fisheries move to quotas
 - Fishermen move to professionalize through organization, training & education
 - Diversification and some stocks rebound to benefit fishermen & communities
 - Implementation of Responsible Selective Fisheries

CARAQUET, N.B. SCHOOL OF FISHERIES



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CARAQUET, N.B. SCHOOL - Responsible Fishing Modules



- Review of Fishing Industry
- Fish Biology/Behavior
- Fisheries Management
- Gear Selectivity - fixed or mobile
- Electronic Gear
- Environmental Issues
- Review and Summary

CARAQUET, N.B. SCHOOL - Fishery Officer Modules



- History of Commercial Fisheries
- Biology of Local Species
- Selective Harvesting Technologies
- Ghost Fishing, Pollution & Discarding Fish
- Fisheries Management, Science & Responsible Fishing
- Law Enforcement & Detecting Violations

MARINE INSTITUTE - St. John's, NFLD



- Started as a college in 1964
- Now a world class centre of advanced marine technology & education affiliated with Memorial University
- School of Fisheries and Maritime studies
- Fishing Technology Unit - Flume Tank
- Similar courses to New Brunswick School of Fisheries

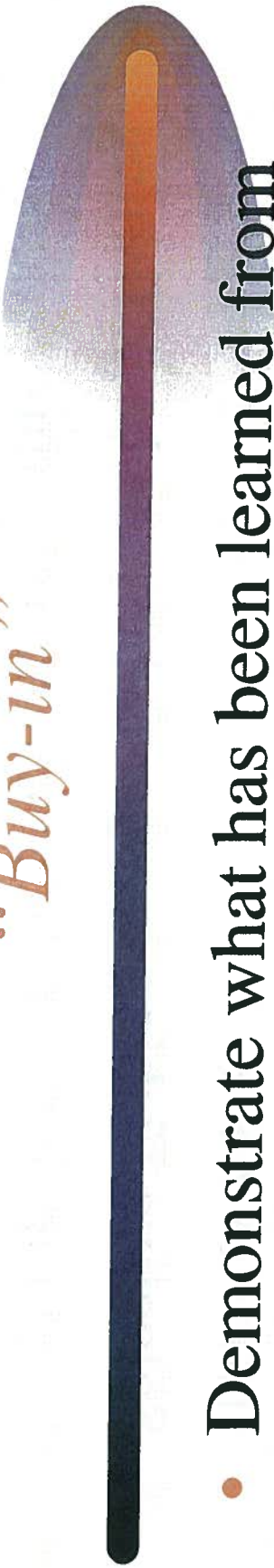
INVESTIGATIVE TEAM - The Messages to Fishermen & Public



- Fishermen world-wide are leading a move to a more Responsible Fishery
- Selective Fishing is international & key to the Responsible Fishery of the future
- East Coast harvesters changed their attitude, organized, educated, diversified and brought some fisheries back
- Selective Fishing can get fishermen back fishing
- Training & Education important in this process

INVESTIGATIVE TEAM - Getting

“Buy-in”

- 
- Demonstrate what has been learned from the East Coast
 - Outline the benefits to the West Coast fleet from following the East Coast example (regain fishing opportunities)
 - Explain the consequences if change does not happen (lost opportunities)

INVESTIGATIVE TEAM - How to get message out? short, medium & long-term

- Information out to fishermen, companies, provincial agencies, public - presentations, summary to licence holders, articles in magazines & newspapers, etc.
- Adapt East Coast material for the West Coast & partner with training institutions
- Future education programs and training facility

