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**1994 Consultations on
Research Programs and Priorities of
Scotia-Fundy Science Groundfish Program**

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Abstract

As part of an annual process to consult with industry on priorities in the regional groundfish research program, a series of meetings was held in Pubnico, Shelburne, Yarmouth, Sydney and Dartmouth during October - November 1994. At these meetings, participants were presented with an overview of the groundfish program and asked their opinion on overall program makeup, direction of individual projects, and perceived gaps. This report documents the results of these consultations and serves as a basis for program changes to be made in 1995/96.

Résumé

Dans le cadre d'un processus annuel de consultation avec l'industrie sur les priorités du programme régional de recherche sur le poisson de fond, des réunions ont eu lieu à Pubnico, Shelburne, Yarmouth, Sydney et Dartmouth en octobre et novembre 1994. À ces occasions, un survol du programme de recherche sur le poisson de fond a été présenté aux participants, qui ont été appelés à donner leur opinion sur le contenu général du programme, sur l'orientation des travaux de recherche et sur les lacunes perçues. Le présent rapport expose les résultats de ces consultations et sert de fondement aux changements à apporter au programme en 1995-1996.

Introduction

The Science Branch of the Department of Fisheries and Oceans (DFO) annually conducts a review of its programs in the fall in preparation for the following year's budgeting. Last year, a series of meetings were held in Yarmouth, Sydney and Dartmouth to formally solicit feedback on the Science programs (O'Boyle, 1993). In previous years, decisions on program changes depended on recommendations made by regional Advisory Committees, scientific bodies such as the Canadian Atlantic Fisheries Scientific Advisory Committee (CAFSAC) as well as informal feedback from individuals.

In 1994, meetings were conducted in Shelburne (17 Oct), Pubnico (18 Oct), Yarmouth (19 Oct), Dartmouth (16 Nov) and Sydney (29 Nov). The last three meetings started with presentations by R. O'Boyle on the Regional Science and Groundfish programs. During this, emphasis was placed on how the consultations in 1993 influenced decisions on the 1994/95 budget. The discussion was then opened to participants. The meetings in Shelburne and Pubnico focused on the groundfish programs with presentations by individual scientists, followed by discussion. These meetings again highlighted how last year's consultations were used in project design. In all meetings, the philosophy was to listen to the industry rather than just conduct a 'show and tell' exercise. A rapporteur was chosen for each meeting who recorded all comments made. As discussion was often lively and didn't strictly follow the agenda, it was necessary to sort these comments by agenda topic when this report was compiled.

The draft report was circulated to participants before being finalized. The discussions held at these meetings were considered as part of the 1994 planning exercise and the results of this exercise reported to meeting participants.

Regional Science Context

The Scotia-Fundy region is composed of a number of diverse organizations, all responsible for different parts of the fisheries mandate. For convenience, it can be described as being composed of the following elements:

- * Non - Science activities, including Fisheries and Habitat Management Branch (FHMB), and Administration units,
- * Science activities, including Biological Science Branch (BSB), Physical and Chemical Sciences Branch (PCSB) and the Canadian Hydrographic Service (CHS), but excluding ships and their support, and
- * Ships activities, including both Science and non Science platforms.

The breakdown of the total regional budget by these categories and a comparison to comparable figures for 1993/94 is given in Table 1.

Table 1. Funding levels (\$ million) for A and B - Base programs in the Scotia-Fundy Region of DFO.

Program	Operations/Capital		Salary		Total	
	1993/94	1994/95	1993/94	1994/95	1993/94	1994/95
Science	8.0	8.9	24.5	23.3	32.5	32.2
Non-Science	24.5	28.2	26.2	23.0	50.7	51.2
Ships						
Science	5.8	4.2	7.3	7.3	13.1	11.5
Non-Science	1.9	2.1	5.4	5.1	7.3	7.2
Total	40.2	43.4	63.4	58.7	103.6	102.1

In 1994/95, out of a total regional budget of \$102.1 mil, \$32.2 mil was spent on Science (excluding ships) and of this \$8.9 mil was available for Operations and Capital. The majority (\$23.3 mil or 72%) of the Science budget was to cover the salaries of about 440 staff. It is important to note that there is little flexibility in the reallocation of the Salary budget, at least in the short term.

Almost half of the O&M/Capital funds come from so-called B-Base programs. This funding is directed towards specific projects and cannot be re-assigned regionally. Therefore, only about \$4.0 of the total Science budget can be re-assigned at the discretion of local management.

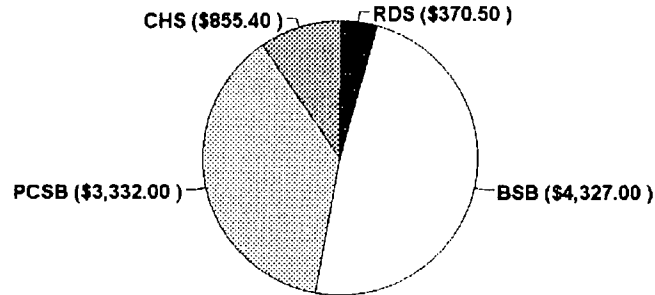
In comparing the 1993/94 with the 1994/95 figures, it is interesting to note the increase in O&M/Capital and the decrease in Salaries, the two summing to an overall reduction. These trends are explained by the fact that the B-Base sources of funding have increased while A-Base has decreased. The latter is the main source of funding for salaries, while the former is used to support O&M and capital.

Within the Science budget (A and B-Base combined), the BSB commands the majority of funds, both for O&M/Capital and Salaries. PCSB has the second highest budget, with CHS third, followed by a modest budget for the Regional Director of Science (RDS).

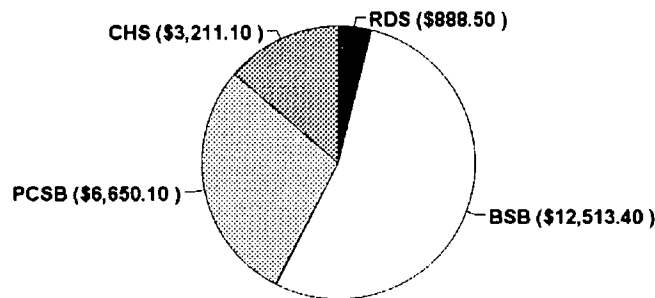
The BSB program is the most extensive of Science in the Region. It is composed of:

- * Harvest Fisheries studies including finfish (groundfish and pelagics)/seals, invertebrate and freshwater programs,
- * Aquaculture studies including finfish, invertebrate and aquaculture programs, and
- * Habitat studies spanning research from algae, the base of the food chain, to the impacts of fishing technology on the benthos.

Scotia-Fundy Science Budget Allocation
1994/95 O&M and Capital (000s \$)



Scotia-Fundy Science Budget Allocation
1994/95 Salaries (000s \$)



In its deliberations of 1992/93, the Executive of BSB considered that an appropriate allocation of funds among the above three study areas would be 65% harvest fisheries, 15% aquaculture and 20% habitat. This target split was also used in setting the 1994/95 budget allocations.

As noted in O'Boyle (1993), the BSB O&M/Capital budget has continually declined since 1987. To meet these cuts, a number of actions have been taken:

- 1) the freeze on hiring started in 1992/93 has been continued. As well, as many temporary positions as possible have been discontinued.
- 2) In 1991/92, the BSB overtime budget was \$990K. By 1994/95, this budget had been reduced to \$369.3K.
- 3) The Lady Hammond charter was terminated and some of the freed-up funds used to offset the BSB cut.
- 4) All infrastructure (non-research) operating costs were identified, reviewed and funded at a bare minimum. This included the cancellation of contracts for services where possible and the backfilling of these by BSB staff.

- 5) All conference travel was cut unless paid for by an external agency.
- 6) Each research project was evaluated in relation to the following questions:
 - Can the research project be completely covered under B-Base funding?
 - Can the project be deferred ?
 - Would stopping the project be detrimental to clients, or a waste of invested resources?

The impact of these actions on the 1994/95 BSB budget allocation is given in Table 2. This is comparable to Table 2 of O'Boyle (1993) with the exceptions that the Branch administrative budget are provided as is the B-Base funding. The latter was solely in support of Habitat research projects. Also, the Overtime allocation of \$369.3K is excluded.

The administrative allocation includes funding for priority issues at a Branch level, as well as facility support for the St. Andrew's Biological Station (SABS). This budget experienced a reduction of 21 percent.

The Finfish/Seal Program was cut by 23 percent with smaller cuts to Invertebrate (7%) and Freshwater (3%) studies. In regard to the latter, much of the budget had to go towards supporting infrastructure costs such as hatchery support and thus it is difficult to reduce these without fundamental change to the program. Aquaculture research was reduced 25 percent and finally, Habitat Studies received a modest increase. The latter is deceptive as \$442K of the 673.6K 1994/95 budget is from B-Base sources and is thus not open to consideration by BSB management. This leaves only 231.6K for discretionary spending within the program. This is compared to \$416.7K in 1993/94 which represents a cut of 44 percent.

Table 2. Comparison of the 1993/94 with 1994/95 O&M (A-Base and B-base) budget Allocations (\$000s) for the Biological Science Branch, Scotia - Fundy Region

	1993/94 Allocation	1994/95 Allocation	% Reduction
Administration	1022.4	812.2	21
Finfish/Seal Studies	518.9	400.1	23
Invertebrate Studies	325	302.4	7
Freshwater Studies including Enhancement	520.6	505.7	3
Aquaculture Studies	357.4	269.2	25
Habitat Studies including Climate (A-Base in brackets)	668.7 (416.7)	673.6 (231.6)	0 (44)
Total	3390.8	2963.2	13

The reductions in the Finfish/Seal program were not limited to just groundfish but affected a number of areas, as illustrated in Table 3.

Table 3. Comparison of 1993/94 and 1994/95 O&M Allocations(\$000s) for the Finfish/Seal Program

Program	1993/94 Allocation	1994/95 Allocation	% Reduction
Administrative Support	113.1	100.7	11
Groundfish	273.5	211.2	23
Pelagics	72.4	51.5	29
Marine Mammals	59.9	36.8	39

The reduction in administrative support was the lowest, this due to the need to maintain essential support services (phones, office supplies, etc). As will be seen below, the groundfish program has a large component of non-discretionary, monitoring activities and thus the cuts were limited to 23 percent. Both pelagics, and particularly the Marine Mammal program received large cuts. In relation to the latter, during the 1993 consultations, it was considered by participants that, given the historical large amounts of money experienced by this program, it was now opportune to synthesize what had been learned and thus reduce funding. This policy was adopted as is evidenced by the 40 percent cut in funding.

1994/95 Groundfish Program

Overview

This program is divided between the Bedford Institute of Oceanography (BIO) and the St. Andrew's Biological Station (SABS) with port sampling activities operating out of five field locations (Sydney, Guysborough, Lunenburg, Lockeport and Yarmouth). The mandate is to provide advice on the impacts of human activity on the Region's groundfish populations, and to conduct research on the biological and fishery-related processes in support of this advice.

A diverse array of clients receive input from the program. Within DFO, advice is provided on a routine basis to both Ottawa and Regional Science and management staff, both in Scotia-Fundy and elsewhere. Staff participate in organizations such as NAFO, ICES and the FRCC. In 1994, CAFSAC was replaced by the Regional Advisory Process (RAP) in which many staff participated. On-going contact is kept with a number of fishermen's organizations as well as individuals. Finally, considerable effort is expended in education initiatives and answering queries from the general public.

The mandate requires the provision of advice and information for a wide range of commercial and non-commercial species. However, due to budget constraints, research activities are focused on the major commercial species, these being cod, haddock, pollock, and silver hake. In 1994/95, as a consequence of last year's consultations, work on flatfish (plaice, witch, yellowtail, winter flounder, and atlantic halibut) and redfish was enhanced. Also, due to the increased interest in skate on the Eastern Shelf, a modest program in cooperation with fishermen was initiated. Work on other species such as white hake, cusk, monkfish, wolfish and hagfish, is limited to answering queries using existing datasets.

The groundfish program can be considered to consist of:

- * Long-term population monitoring, involving the on-going sampling and survey of the fish populations,
- * Short-term Process Studies, designed to elucidate the processes observed in the long-term population monitoring - why is recruitment declining, why are growth rates down, what is the impact of a particular gear regulation, and so on,
- * Resource modelling, which brings together all the available information into a coherent whole (normally referred to as stock assessment), and,
- * Client consultation.

An overview of the O&M budget allocation for the Groundfish Program is given in Table 4. Resource modelling involves staff time and thus does not require O&M funding. Contrary to O'Boyle (1993), the costs incurred in client consultation are incorporated into the appropriate short-term study project.

Overall, except for cuts to surveys and ageing (to be discussed below), the majority of the Groundfish Program reductions were made at the expense of short-term studies, particularly of a species-specific nature. However, these cuts were not random and benefited from client input given in 1993.

Table 4. Comparison of 1993/94 and 1994/95 O&M Allocations (\$000s) for the Groundfish Program

Program Element	Project	1993/94 Allocation	1994/95 Allocation	% Reduction
Long-Term Monitoring	Commercial Sampling	49.5	51.5	0
	Surveys	16.3	8.5	48
	Ageing and Maturity Studies	12.6	7.5	40
	Ocean Climate Measurement	45.7	45.5	0
Short-Term Studies	Species-Specific	106.7	67.1	37
	General	42.7	31.1	27
Total		273.5	211.2	23

Long-term Monitoring Programs

Regarding Commercial Sampling, both the Observer and National (port) Sampling projects maintained their funding. Indeed, the latter program was expanded to cover the invertebrate fisheries, specifically snow crab and shrimp in Cape Breton and scallops and crabs in South West Nova Scotia. This allowed savings in the invertebrate program which could be used elsewhere in the Branch. The National Sampling and Observer programs were also used in the recording of information collected in Sentinel Surveys initiated in 1994.

While the offshore spring and summer surveys were maintained (minus the SCANMAR or net monitoring system which was mothballed), one of the two inshore surveys in Cape Breton and the one in South West Nova Scotia were cancelled in 1994. Although the worth of these surveys is recognized, it was considered that there should be a review of these before they are developed into long-term time series. Last year, many clients mentioned that the industry could conduct surveys at a cheaper cost than DFO. In Cape Breton then, the first of a series of surveys was established with fishermen as part of the 4Vn Cod sentinel survey program. Also on the Eastern Shelf, a small survey was initiated with Skate fishermen as part of the development of this resource. In South West Nova Scotia, discussions were held with a fishing company which offered its services as a research vessel. As well, both the mobile and fixed gear associations have expressed interest in participating in joint Science/industry surveys, similar to those in Cape Breton. Followup work on these initiatives is currently underway.

It has been obvious for some time that enhanced interaction and cooperation between fishermen and scientists on projects such as joint surveys would require new ways of communicating. It is for this reason that a number of program scientists have been working closely with fishermen over the last two years to establish the Fishermen and Scientists Research Society (FSRS). The Society's management team was confirmed, the data bases and field collection procedures set up and initial training conducted. The Society has held a number of meetings to discuss potential projects in the Eastern Shore area. The Society plans to expand its membership both in Cape Breton and South West Nova Scotia over the next two years.

In relation to the Ageing and maturity project, funds were secured to assist in the resolution of the haddock aging problem which has complicated assessment of this resource on the Scotian Shelf. The results of these studies will be available in 1995/96.

Short term Process Studies

These consist of projects targeted at issues involving particular stocks as well as studies designed to elucidate processes that are of a more general nature.

Table 5. Comparison of 1993/94 and 1994/95 O&M Allocations (\$000s) for Short-Term Projects in Groundfish Program

	Project	1993/94 Allocation	1994/95 Allocation
Stock-Specific	Cod	53.7	28.1
	Haddock	28.1	21.4
	Pollock	12.1	8
	Silver Hake	2.3	2.6
	Redfish	0	1
	Flatfish	10.5	6
General	Population Processes	31.6	18
	Management Issues	4.8	10.6
	Assessment and Survey Methods	6.3	2.5

Cod: 4Vn is known as an area of extensive mixing of Gulf and Shelf cod. The processes are complex and require consideration of a number of different data sets and factors. Consequently, a working group was established to investigate the interaction of Gulf and Shelf cod in this area. As well, Scotia-Fundy scientists participated in a workshop on the management of the Gulf cod held in Moncton in November. The issue of stock structure was raised, in particular the use of ear bones to establish stock affinity. The deliberations of the working group will be very useful in determining management approaches in this complex area.

A model of the interaction between 4VsW cod and the Sable Island seal herd was developed using the research conducted during 1989-94 as part of the Seal/Sealworm Ecology Program. This model was reviewed at the regional and zonal assessment meetings in May, and has been more recently presented to the international scientific community. It represents our best understanding of the interaction between these two species and has been incorporated into the 4VsW cod assessment. It will be essential to the development of policy for the control of the seal population.

The Georges Bank survey went as scheduled. As well, a tagging study, with the participation of a fisherman, was undertaken to obtain a better understanding of the movement of cod across the Canada/US boundary. This will assist in refining the management policy used by Canada on Georges Bank.

Lab experiments were conducted to determine the reproductive performance of male cod and how this may be related to size and/or age. This study is being extended to females in 1995/96.

Haddock: On the Eastern Shelf, dialogue was held with the FSRS on a tagging program to determine the association of the haddock caught inshore and offshore. This project will also examine the distribution of other species such as white hake.

In 4X, meetings were held with members of the industry who have proposed the use of their vessel in the surveying of the inshore grounds. As part of the evaluation of this proposal, the historical data has been analyzed in an initial review held in the late fall. Further work on this issue will occur in the winter. Also in 4X, the SWNSFGA and ITQ Association have offered to participate in surveys similar to that conducted in 4Vn. The details are currently being worked out.

Pollock: The assessment of this resource proved difficult in May. Efforts are continuing to more fully analyze the existing commercial catch rate and survey data.

Silver Hake: As part of the Harris Panel on Foreign Fishing, analyses were conducted to better define the spatial and temporal extent of the small mesh gear box. These analyses have led to regulatory changes that will significantly reduce the bycatch of domestic species in the foreign silver hake fishery.

Redfish: Changes were made at BIO to assign a scientist to the Unit 3 resource. The first comprehensive summary of available information conducted since 1986 was thus presented to the regional assessment review body. Consultations with industry were held on the length composition of the 1994 catch and the definition of the management units.

Flatfish, including halibut:

During 1994, the analysis of existing data continued along with consultation with fishermen. A cooperative tagging program of juvenile halibut to investigate growth and migration has been planned as has a tagging study on winter flounder.

Population Processes:

Further work was conducted to improve our knowledge of how environment affects the fish populations. We are developing an understanding of species and even age-specific effects that will not only provide more insight on recent changes in the ecosystem but also allow better interpretation of the survey and commercial catch rate data.

Work continued on the use of otoliths and genetics to differentiate fish into their respective stocks. This research has proved very promising and has application in a number of management issues.

Management Issues:

The current management approach focuses on allocating either catch or effort among the fishermen. Another approach involves allocating portions of the population itself. Modelling of this population-rights based approach was conducted to evaluate whether or not it is a practical alternative to the current system.

Assessment and Survey Methods:

A big advance was the use of a length-based model to conduct the haddock assessments. Haddock aging, particularly in 4VW, has proven problematical in recent years and alternatives to the age-structured analysis have been investigated. This research advanced to the stage where a complete assessment of the 4X and 4VW haddock stocks could be attempted in May, 1994. The model needs further work which is currently being pursued.

Client Consultations

Shelburne - 17 October 1994

The agenda for this meeting (Appendix I) focused on specific scientific projects and did not dwell on the budget information. A list of participants is given in Appendix II. During the course of the concluding discussions, it was agreed that the concept of having three regularly-scheduled meetings per year was acceptable. To ensure the best possible publicity, use of local newspapers (such as the Coastguard) was suggested by the fishermen. As well, it is essential to have the port technicians spread the word about these meetings during their daily activities.

A number of special collections were discussed and fishermen agreed to help scientists where possible. The role of the SouthWest Nova FGA was discussed in this regard. It was agreed that the FGA could act as liaison or a point of contact for such special requests. However, it was noted that the FGA has limited resources for such activities, and their role would necessarily be limited.

After the presentation on oceanography and fish distribution, there were several questions related to the temperature and depth preference of cod. Problems of encountering too much haddock when fishing for cod at traditional locations were mentioned.

Staff working on Georges Bank cod presented results of investigations of maturity at size, preliminary results from the tagging study conducted this year, and results of an investigation of different patterns of otolith growth that may represent mixing of fish from outside the management unit. All studies were greeted with interest, particularly the tagging investigation. Questions were raised regarding the seasonality of the fishery and the distribution of effort with regard to the interpretation of results. After the presentation of the Georges Bank haddock research program and a proposed tagging investigation, fishermen expressed reservations concerning the viability of haddock caught with any fishing gear, including longlines.

The presentation on 4X cod focussed on a discussion of distribution of adults by sex, which appeared to show that fish were clustering by sex. Fishermen added their interpretation and information, noting that fish caught onshore are now entering spawning condition. Comments on 4X haddock generally dealt with the discrepancy between the assessment and fishermen's perception of stock status.

The research program for pollock seemed to be generally well-received. However, when a research proposal seeking to identify the significance of intertidal algae was discussed, fishermen commented that pollock are not particular regarding the type of habitat they are found in. For instance, they are also abundant around wharves and kelp beds. When discussing the results of the assessment, fishermen noted that longliners are catching large quantities of pollock over the last several years. Historically, none were caught by longliners, regardless of the overall abundance of pollock.

The research program for Atlantic halibut was discussed. Fishermen noted a gear conflict with swordfishing operations, and attributed recent declines in landings to this. Another fisherman noted that he used to fish down to 400 fathoms in December in the hopes of catching large fish, which were aggregating at depth for spawning. This comment was particularly interesting, since a recent scientific report indicated that peak spawning of halibut does occur during the November-December period, but the location of spawning was not determined with certainty. The report speculated that spawning occurs in deep water off the continental shelf. This fishermen's comment is consistent with the view in the scientific study.

The concluding presentation dealt with an alternative to traditional fisheries management systems, known as population rights. The basic premise is to provide appropriate rewards and penalties according to how fishers elect to use their share of the resource. The presentation generated much interest, and fishermen had numerous questions concerning how such a scheme could be implemented. Much of the concern focussed on potential political interference.

Pubnico - 18 October 1994

The agenda for this meeting (Appendix I) focused on specific scientific projects and, as in Shelburne, did not dwell on the budget information. A list of participants is given in Appendix II. The general conclusion was that the meeting was worthwhile, and attendees supported the concept of having three meetings per year. Fishers felt that it was an opportunity to learn more about science, understand what DFO scientists were doing, and also for scientists to gain insight from fishermen.

The issue of attendance was discussed. Timing was, in the eyes of the fishermen, the most important issue. For example, a meeting such as this scheduled in early June would have been a waste of time because Georges Bank was just opening. Meetings dealing with stock status are likely to draw more audience than these, which deal with science issues. Publicity arrangements were thought to be good.

After the presentation on the fisheries oceanography research program, some fishermen commented that we should be seeking correlations between physical variables such as temperature and prey species, rather than predators such as cod. Further comments dealt with the effect of wind direction on catch rates. Fishermen commented that winds from the north-east usually meant that catch rates were depressed, particularly around the LaHave area. In response, it was noted that wind-driven upwelling can result in significant changes in water temperature within hours.

As was the case in Shelburne, much of the discussion regarding 5Z cod focussed on the tagging study. There was considerable discussion on the observed movements thus far and the implications for management units. DFO scientists noted that the results were preliminary at that point, and were not adjusted for effort. For 5Z haddock, there was discussion of size at maturity, and the implications of letting fish spawn once versus several times before harvesting. A presentation on yellowtail flounder was also given, which focussed on recent increases in landings on Georges Bank. DFO scientists concluded that the fishery was not simply based on a single strong year class or unusual distribution of fish, rather there appeared to be the basis for a small-scale continuing fishery.

During the discussion of the 4X cod research program, it was noted that many young cod are being taken in lobster traps. Subsequent to the meetings, DFO Science followed up on this observation by placing a scientist on a lobster boat. He confirmed that significant numbers of small cod were taken in the lobster fishery, and that they were collected in excellent condition, raising the possibility of tagging investigations in the future. There were no questions or comments on the 4X haddock presentation.

A presentation was made on Unit 3 redfish, and most of ensuing discussion focussed on issues of stock structure. Consistent with comments made for other stocks and elsewhere, fishermen felt that they were unable to offer as much assistance to scientists as they could in other years since their fishing operations are curtailed by management measures.

After the presentation on the pollock research program, the majority of questions dealt with possible interactions of pollock catch rates (either RV or commercial) and the environment. In particular, it was noted tidal effects are worth investigating, possibly in conjunction with time of day. The importance of bottom topography in influencing the distribution of this species was also discussed.

Discussions of the flatfish initiatives generally concerned the tagging study. In addition, initiatives to improve species identification were discussed.

As in Shelburne, the Pubnico meeting concluded with a discussion of the population rights concept for fisheries management. Again, the discussion was lively, with many questions on the technical feasibility of the approach. Once such concerns were addressed, however, many fishermen seemed interested in learning more. As in the previous meeting, the fear that the process would be open to political interference was raised.

The meeting in Shelburne and Pubnico had two goals. The first was to gain some input into priorities for Science activities for 1995/96. The second was to inform fishermen of research highlights from the past year. Of the two, the second goal was accomplished to a greater degree. Fishermen had no hesitation in offering their own interpretation on the results of DFO studies. These comments were very useful, and in many cases, helped DFO Scientists interpret findings in ways that hadn't been thought of. Regarding input into planned research, somewhat less feedback was obtained. There were, however, frequent offers to assist with special collections and a genuine interest in helping scientists to achieve their goals. The planned stock structure studies (Georges Bank cod and Unit 3 redfish) appeared to be of considerable interest. The presentation on population rights aroused many questions, and there was encouragement to continue this line of investigation.

Yarmouth - 19 October 1995

While the purpose of this and the following meetings was the same as those in Shelburne and Pubnico, the agenda (Appendix I) differed in that a presentation of the Regional and Science 1994/95 budget was given, along with that for the groundfish program. During this presentation, topics were highlighted which received funding as a consequence of last year's consultations. The meeting was not public as the participants (Appendix II) had been invited.

The Regional Science Context

The meeting started with a presentation of the Regional budget situation and the overall problem of continual diminishing funding. In the short term, B-Base funding sources will support some program areas, such as habitat research, but in the long-term, new funding approaches are needed. It was noted that in regard to current B-Base programs, such as GLOBEC, there will little input into program priorities, other than from Science. Some participants felt that industry should have more input into these, although it was countered that these are highly technical, international projects. Others mentioned that we should make more use of the NSERC Industrial Post Doc program. Overall, it was felt that there is a need for industry to have more say in budget prioritization of B-Base funding. At the very least, more information on this funding needs to be incorporated into this report. Some of this was compiled for the habitat programs. More complete information will be provided in next year's document.

One means to obtain industry into the allocation of funding is to create joint industry/Science boards which have funding and the authority to allocate it to identified priority areas. Such an approach has been used with the Canadian oil industry as well as in other countries such as Australia. There was agreement that these would be useful and their establishment should be investigated further.

Reference to Australia stimulated discussion on how the Canadian fisheries situation fared internationally. It was noted that Canada has larger resources and fisheries Science expenditures than smaller countries like Australia. Our reputation has been based on large projects such as the Scotian Shelf Ichthyoplankton Program (SSIP), FEP and OPEN, funding for which is becoming scarce. Participants were concerned with this, noting that Science is an investment in the future. Indeed, funding pressures are preventing Science from taking advantage of recent innovations in technology that could assist programs such as surveys.

Regarding comments on specific programs, it was reiterated by participants that the prime mandate of DFO should be conservation and protection. Any funding for social programs should be cut. In relation to the protection function, it was considered that DFO should make more use of Naval and Coast Guard vessels in enforcement. Also, comment was made on the US sanction system in which fines are based on one's ability to pay.

As last year, there was considerable discussion on the need to fund aquaculture research. There was the sentiment that this should be funded by the private sector, particularly salmon. In the case of haddock and halibut, species for which there is no established commercial farming activity, DFO funding was seen as necessary.

1994/95 Groundfish Program

Regarding overall program composition, it was noted that the cuts came predominantly from the short-term studies rather than the long-term monitoring. Within the short-term monitoring, some reorientation of resources towards non-traditional species, such as skate and harbour porpoise, has occurred, albeit on a limited basis. Notwithstanding this, it was noted that the DFO surveys collect information across a range of species and it is this that has allowed some response to industry on the harvesting of these resources. Specific comments follow.

Long-Term Population Monitoring

It was mentioned that the port sampling program has diversified its coverage to include invertebrates, such as snow crab and shrimp in Cape Breton and lobster and scallop in South West Nova Scotia. There was no comment on these changes.

Science commented on the impact of the reduced overtime budget on the surveys. Staff have cooperated in ensuring that these surveys are conducted. However, it has adversely affected shore-based productivity as staff are spending proportionately more time on leave. This led into a discussion on the need for joint industry/Science surveys, similar to those conducted off Cape Breton. Participants felt that Science could get better data more cheaply from jointly-run surveys. It was recommended to schedule a separate series of discussions with representatives of the mobile gear fleet to plan a cod/haddock survey in 4X in 1995. Similar discussions are already underway with the Fixed Gear sector in the area. During the discussion on pollock, mention was made of the need for a separate survey for this stock, which could involve the offshore. Again, it was recommended for Science to conduct followup discussions.

Overall, the discussion on these projects underlined the opportunities for collaboration. This highlighted the need to define who pays for what. It was suggested that the industry could pay for data collection while DFO would pay for analysis.

Short-Term Studies

There was considerable discussion on the process whereby Science allocates its limited budget among the various stocks under its mandate. Particular reference was made to increasing interest in non-traditional species. After some discussion, it was considered that the funding should be allocated according to a resource's growth potential and not current value. In other words, if the wolffish resource will always be low, it may be more profitable to expend resources on haddock that will eventually increase.

There was general support for Science's role in providing the information to prevent damage to the stocks. Some participants felt that Science has been more right than wrong and that most problems with the fishery have been political. Therefore, participants saw relatively more need for cooperation with DFO on management issues.

The following stock-specific were also discussed:

Cod:

Re 4X, comments were made on the possibility of using cod caught in lobster traps in tagging studies. This was mentioned for haddock as well.

There was some discussion on the transboundary nature of the resource. Participants felt that after spawning cod move to deeper water and thus cod caught in the Fundian Channel may be either from Brown's or Georges. This is a good topic for a tagging project.

On the issue of distribution, some commented that cod follow the feed and temperature. As well, it was noted that when the ice comes in from the east, along come the cod. This may indicate processes similar to those observed by Alain Frechet in Quebec.

Haddock:

Re 4X, mention was made of the aging problem and the use of a length-based analysis procedure in the assessment. During this discussion, the population structure in 4X was outlined, including the growth and abundance in different areas, use of vertebral counts to examine trends in year-class strength, plans to analyze historical tagging data, and so on. Some participants complained that the temperature probe data had not been analyzed. It was pointed out that funding for this project had been cut, causing a cessation of activity.

There was considerable discussion on the status of the 4X haddock resource. Many mentioned that discarding was a serious problem and that small haddock were evident everywhere. Science responded that the stock status was based primarily on the summer survey results which had indicated low stock size. Mention was made of discussions with some members of the industry to conduct a joint industry/science inshore survey in 1995. The group felt that the 4X situation was a good opportunity to initiate a joint industry/Science survey, similar in principle to that conducted off Cape Breton. It was in this context that the proposal was made to have followup discussions to develop a proposal.

Re 5Z, an overview of the work describing the transboundary distribution and movement was provided by Science. Questions were raised on the stock affinities of haddock caught in the Fundian Channel, indicating potential future study. Discussion then proceeded on the spawning closure regulation. The Bank is currently closed for the first six months of the year. It was queried whether or not this coincided with peak spawning. Participants considered that if the closure was to protect spawning, then the regulation could be supported. However, if the regulation was only to reduce effort, then it should be reconsidered. For this reason, there was not general support for the US proposal. In this regard, the question was asked what would be the potential US catch be if the Bank was opened earlier.

Pollock:

It was emphasized during the presentation that the current research is focusing on a thorough examination of the existing data set and based on this, a program will be developed. As with the other stocks, concerns were raised over the need to protect spawning areas. For pollock, it was noted that LaHave Bank is an area of spawning in the winter and was a good candidate for closure during Jan-March. Participants queried on knowledge of other potential areas.

There were questions raised on the stock structure and the state of the stock. The suggestion was made to close half the banks for a two year period. The general feeling was that the stock was not in good shape. Comment was made on the appropriate mesh size for the fishery, with the sentiment that square mesh was best, with grates of potential use. Given the apparent politics of mesh regulations, many stated the need for formal evaluation of these regulations in RAP.

The catch of small pollock in weirs and mackerel traps in early June was mentioned. Science noted the historical unpublished study on the latter and attempts to develop a juvenile survey. Some participants felt that at the very least we may need a catch at age developed for the trap fishery. Related to juveniles was the issue of the rockweed catch. There were questions on the impact of this on pollock recruitment and the need for further study, particularly the distribution of rockweed in relation to pollock juveniles.

As with cod and haddock, there was discussion on the need for a cooperative industry/Science survey. This survey would necessarily be unique for pollock due to its distribution (patchy and on edges and slopes) along with environmental influences (i.e. tides). A followup meeting between Science and selected industry participants was recommended.

Redfish:

The discussion focused on the need to quantify the impact of the recent bait fishery on the future yield of the resource. Science commented that as long as the overall exploitation was low, the impact would be slight but this analysis needs to be done. This discussion raised the possibility of the use of grates in the fishery. This underlined the need for selection studies on this gear.

Flatfish:

The need for accurate catch statistics was again mentioned. The plan to try and use log estimates to develop proportions by species was noted. Current experiments on the selection of flounder gear were described, for which there was support.

There were questions on the movement of winter flounder that arose from the tagging study. This also was discussed for halibut. In the case of the latter, there were questions raised on the location of spawning, with indications from previous studies that this occurs off the shelf.

Other Species:

There was a lot of discussion on the demise of the herring bait fishery in the inshore bays over the last three years, the concern being that this may have a detrimental effect on the groundfish populations. The general feeling was that the stock is in much worse shape than DFO analyses indicate.

Population Processes:

As last year, participants saw a lack of Science programs designed to define the relationships and interactions among the various species. The response was that these studies are very expensive and cannot hope to provide all the answers. The cod/seal model was given as an example. When this was mentioned, many participants noted that seals are known to eat the non-bony parts of a cod (i.e. liver and roe). This further underlined problems in measuring these interactions.

Management Issues:

A brief description of the new RAP process was provided which emphasized both more regional responsibility in peer review as well as a desire to open the process to industry and management alike. Participants saw this as a good thing.

The December 1993 Groundfish workshop was mentioned as was the planning for the second exercise to be conducted this winter. This led to a discussion on the need to revitalize the Scotia-Fundy Groundfish Advisory Committee. Most participants felt that the advisory committees should be structured by area i.e. 4VW and 4X/5 which was the old model.

Assessment and Survey Methods:

There were few comments on research in this area other than those documented above.

Dartmouth - 16 November 1995

The meeting was run similar to that in Yarmouth (see agenda in Appendix I). A presentation of the Regional and Science 1994/95 budget was given, along with that for the groundfish program. During this presentation, topics were highlighted which received funding as a consequence of last year's consultations. The meeting was not public as the participants (Appendix II) had been invited.

One overall comment made at the end of the meeting was that the presentation would have been more useful if next year's proposal's had been tabled. The focus of the meeting had been what was achieved with questions on where to go next. Participants felt that it would have been more beneficial to discuss a specific proposal. The danger of this approach is that it can exclude important topics not listed. Notwithstanding this, this approach will be attempted in 1995.

The Regional Science Context

The issue of B-Base funding was extensively discussed. It was emphasized that this funding now covers mostly research, while the A-Base covers the core activities. During the presentation, both GLOBEC and AMFES were mentioned. The former involves US work and Georges Bank and Canadian work on the Eastern Shelf, both focused on a fish's early life history, and has a better chance of being funded than AMFES, which would concentrate on the adult stages. During the discussion, industry queried the extent of industry involvement in these programs, which has been negligible up until now. This raised the issue on industry's contributions to research. Everyone realized that there is no new money. Participants felt that if new money collected from industry was spent locally i.e. not go to consolidated revenue, then some sharing arrangement could be worked out, perhaps an industry/Science board to collect and distribute the funds.

This discussion led into what should be funded and the DFO mandate. There was a feeling that the mandate was too diffuse and needs to be redefined to focus on conservation and sustainability. Social programs are out. It was mentioned that this is what the current DFO Program Review is attempting to achieve. Within this mandate, participants saw funding of the core activities appropriate. Everything else would have to be 'marketed'.

1994/95 Groundfish Program

The relatively small size of the budget surprised many participants, although it was emphasized that only the O&M dollars were presented. There were questions as to why it was so small when this region seems to be conducting work throughout the zone. This raised as to how Science can prevent duplication of research in various regions. It was pointed out that CAFSAC was a good vehicle for Science to keep in touch among regions. The most recent plan is to strike zonal working groups tasked to address specific Science issues. This will hopefully prevent duplication.

Long-Term Population Monitoring

One general comment was that there did not seem to be enough real-time use of data generated by industry. With modern advances in computing, more advantage of what industry collects should be made.

A number of questions were raised in relation to whether or not lengths and weights are taken for redfish, for which the answer was yes for unit 3 and no (Scotia-Fundy at least) for units 1 and 2. Some participants mentioned that their companies have observed large annual, seasonal and spatial changes in fish weight by market category. This information is routinely recorded during the processing and should be of use to Science. It was recommended to have the port technicians follow redfish processing for a couple of days to see how the data is collected and computerized. Based on this, Science could evaluate how best to use the information.

Re the IOP, Science noted the assistance that this program has given both the 4Vn cod and 4VsW skate sentinel surveys. It was emphasized that a big advantage of the program is the well established data collection and processing procedures available.

The survey program was extensively discussed. It was emphasized that in many areas, the DFO surveys are the only means to provide a view of resource size. This was evident during the last round of FRCC consultations. Mention was made of the cancellation of the DFO 4Vn (one of two) and 4X inshore surveys for both monetary and planning reasons. Participants generally saw the need for more, not less, surveys. The problem is one of funding. This raised the issue of sentinel surveys, such as 4Vn cod. Participants felt that as this was supported by TAGS, it was a short term effort. More stable sources of funding are needed. Science commented that uncertainty has been created by DFO restructuring and negotiations on the IOP contract. Given the current funding reality, industry and Science are going to have to cooperate on joint surveys. Last year, industry participants comments that they could run surveys cheaper than DFO could. It is interesting that Iceland in fact charters industry vessels to conduct surveys. In Australia, industry pays for the government costs of surveying orange roughy. The common element is that the survey is ultimately designed using scientific principles and run under scientific permit. This avoids problems encountered in interpretation of the logbook data which is influenced by the regulations. Interestingly, the 4VsW skate survey is a good model in that the industry provides the resources while the design, although jointly agreed to, is based on scientific principles. This initiated discussion on an offshore survey initiative. This was tried a number of years ago (Fishing Captain Program) and has been recently been discussed again as 'Tows for Science'. Participants were generally supportive but wished to discuss it within the offshore sector before proceeding further.

Another vehicle for collecting information is the FSRS. To date, the Society has focused on fish located in inshore waters and how these are related to those offshore. Some meeting participants felt excluded from the Society, given its perceived inshore bias. Science responded that the Society is open to all fishing groups, but that to date had been unsuccessful in attracting offshore fleet participants. A discussion on the Society's mandate and coverage ensued. The Society will continue its efforts to attract offshore participants.

Re the aging program, the only issue was the haddock validation study for which an update was given.

Short-Term Studies

There was some discussion on the work on non-traditional species. Participants felt that cod, haddock and pollock should get the majority of funds, with more given to redfish in particular. The additional work on Georges Bank yellowtail was mentioned.

The following stock-specific were also discussed:

Cod:

The big issue was the mixing of 4T, 4Vn and 4VsW cod in the winter and spring. Questions were asked on how far out of the Gulf do cod come and how far in do Shelf cod go. Science described the 4Vn cod working group established to examine many of these issues. For instance, it was mentioned that there appear to be two spawning components in the Gulf - East and West - with only that of the East entering the Shelf. To the extent possible, the current assessment takes these processes into account. Participants encouraged work in this area, as well as that on 4VsW cod spawning components which was briefly mentioned.

The question of cod/seal interaction was raised. Last year, it had been recommended that the data be written up and used to define a management strategy. The modelling has been done and now it is up to the policy makers to proceed.

Haddock:

The benefits of the closed area in 4VW were debated. Science responded that the circumstantial evidence was that total mortality had decreased and that young haddock generally move north and east out of the closed area. This raised comments on the perceived change in Science's view of the value of closed areas. It was however pointed out that this closed area was year-round and has protected the juveniles in particular.

The only comments raised in relation to 4X haddock are that they, as with cod, are found predominantly inshore, with little offshore.

Pollock:

There was considerable discussion on the research program and the assessment. There was general support for the research activities presented but real concern for the assessment. As well, the issue of stock structure was raised. Particularly, what is the relationship between 3Ps and 4V pollock? Are they the same or different stocks?

Silver hake:

Participants felt that Science should not spend any money on this resource as it is of foreign interest. Some even suggested that the Russians be left to do the assessment. Science responded that this is one of the biggest resources on the Shelf and may be a determining factor in the ecosystem. Also, the Russians do currently conduct an assessment which invariably provides a larger stock size than Canada's. This would complicate the bycatch of domestic species which is of real concern to local fishermen.

Redfish:

The issue of stock structure (Unit 1, 2 and 3) was raised and highlighted as an area for research. As well, Science needs to better define the exploitation strategy for this resource. The FRCC made a number of comments on the capture of small fish which Science did not consider a large problem.

Flatfish:

There were few comments other than the need to better define stock structure and describe distribution in relation to environment.

Other Species:

Mention was made of the exploratory deep sea survey for grenadier and orange roughy. Also, the need for a comprehensive seal control program was reiterated.

Population Processes:

The nature of the stock affinities was flagged as a critical issue, with encouragement of work in this area.

There was considerable discussion on the need to resolve biological issues at the ecosystem level. We have been too focused on single species with trying to 'link the boxes'. As well, Science was encouraged to incorporate the ocean data more. What was recommended was more of a system approach. What happens when seals eat cod, herring, and sandlance and the species mix changes? Science responded that the understanding of these complex interactions is not cheap and trivial. Work in the North Sea has shown how opportunistic cod, for instance, are. Worldwide, researchers are trying to define the key elements of ecosystems to provide strategies for management. In the meantime, the safest approach is not to overexploit the populations. Multispecies interactions become a real issue when the latter occurs. It was mentioned that this will be a topic of discussion in the spring RAP meeting.

Management Issues:

Other than what is presented above, no major issues were raised.

Assessment and Survey Methods:

The need for quantitative assessments was underlined. The problem with the FRCC process is that it asks for opinions and that is what one gets. The problem then becomes one of how divergent opinions are weighed and how opinions in general are weighed against scientific results.

A brief description of the retrospective problem was given, along with potential sources of the problem, these being misreporting, trends in natural mortality, and so on. No one factor seems to be the cause. Silver hake, where the catch data is well known, and 4X haddock, where there are problems, both exhibit the problem. Participants encouraged Science efforts to uncover the underlining cause(s).

The issue of assessment risk was raised. Historically, little information of this gets to clients, particularly financial institutions. Science should do more to quantify risk and inform clients of this.

Sydney - 29 November 1995

The meeting was run similar to that in Yarmouth and Dartmouth (see agenda in Appendix I). A presentation of the Regional and Science 1994/95 budget was given, along with that for the groundfish program. During this presentation, topics were highlighted which received funding as a consequence of last year's consultations. The meeting was not public as the participants (Appendix II) had been invited.

The Regional Science Context

There was little comment on the overall budget situation.

1994/95 Groundfish Program

Contrary to the previous meetings, there were few comments on the overall program and its budgets.

Long-Term Population Monitoring

The vast majority of the discussion related to the 4Vn sentinel survey. While there was support for what had been done, some felt that the stratification scheme needed to be modified. In particular, the existing scheme included all bottom in the area. Cod are not found on mud bottom and thus participants recommended that the strata be modified to reflect this.

Fishermen were still wary of the stratified-random design but wanted to ensure that the correct design to keep future options open. It was recommended however that Science produce a backgrounder or other popular article on the merits of this design. This would go along way to broadening the base of understanding.

Short-Term Studies

Cod:

The issue of cod migration in and out of the Gulf was raised. In particular, the migration out seems to occur year after year. This issue is intertwined with the allocation problem. It was pointed out that the migration is a feature of a range of species including cod, haddock, hake, herring, mackerel, witch, and so on. There was a general desire to learn more about this migration and its timing. For instance, large cod appear to migrate out of the Gulf at the end of September. Interestingly, 4Vn cod seem in better condition this year.

The work of spawning components in 4VsW raised some discussion. Participants encouraged the continuation of this research, particularly to explain the apparent loss of the spring component.

Some participants considered that there should be juvenile nursery areas established around Bird's Island. It was noted that a plan has existed for about two years but not acted upon. It was recommended that this be followed up.

The issue of stock structure was raised. As has been queried before, questions on the affinity between 3Pn and 4Vs cod were asked.

Haddock:

Participants felt that there was more haddock than cod in 4VW and that this was incompatible with the bycatch regulations. Other than this, there were no comments on the program.

Pollock:

Participants mentioned the catching of lots of small (17-19") pollock on handlines. No other comments were made.

Redfish:

Some participants felt that Science should examine the impact of draggers on the unit 1 resource.

Flatfish:

Participants commented on seeing lots of small plaice and more flatfish in general. They felt that the assessment was too pessimistic. However, they did indicate that effort has increased on halibut, calling for more management measures. Re the other flatfish, there was concern for the 60/40 4VW/4X breakdown in the TAC and requested that it be reviewed in a followup meeting.

Other Species:

Lots of dogfish were caught in the 4Vn sentinel survey. Some thought that there always has been a market but that the problem was consistently supplying it.

The size of the 1995 TAC for 4VsW skate was queried to which was provided the fall RAP meeting results.

There were comments on the white hake and cusk fisheries. Both have experienced increases in effort, although cusk seems to be increasing in abundance. The scientific information for these resources is weak. It was recommended that at the very least Science attempt to define the stock structure.

Seals were a topic of discussion. There were reports of seals eating only livers and/or guts out of large cod and grey seals eating large cod off fishing gear. This may bias the stomach data collected by DFO. Finally, participants commented on increased seal sightings inshore.

Population Processes:

No comments on these programs.

Management Issues:

The only substantive issue raised was why DFO was studying the selectivity of the No 12 hook when management had already made its use mandatory. More appropriately, studies comparing the J and Circle hook, bait size, and shank size were considered useful. The upcoming studies on these were described.

Assessment and Survey Methods:

No comments on these programs.

Concluding Remarks

This report documents the second annual series of consultations conducted between DFO Science and its clients in the Scotia-Fundy region. These consultations would not have been the success that they were with the enthusiastic participation of all concerned, for which the editors are grateful. Much was learned by Science on how to improve the nature and content of its programs and where possible changes will be made based on this input through the PREP process to be undertaken by DFO in January 1995.

APPENDIX I. Meeting Agendas

A. Shelburne - Monday, 17 October 1994

1. Introduction
2. Research Highlights in Stocks of Interest to Southwest Nova
3.
 - a. Oceanography and Fish Distribution
 - b. Georges Bank Cod
 - i. Evaluation of catch rates for mobile and fixed gear
 - ii. Report on maturity studies
 - iii. Report on cod tagging experiments in the Gulf of Maine
 - iv. Otolith studies for stock identification
 - v. Planned review of the current management unit
 - c. Georges Bank Haddock
 - i. Distribution and migration in relation to Canada/USA boundary
 - ii. Management considerations of transboundary stocks
 - iii. Fundian Channel haddock: which stock?
 - iv. Improving our models of fish populations
 - v. Effects of gear type/antibiotics on survival of tagged haddock
 - d. 4X Cod
 - i. Distribution by sex during spawning
 - ii. Egg production
 - iii. Inshore acoustic survey
 - iv. Variability in survey trawl geometry
 - v. Retrospective patterns in assessment results
 - vi. Geographic variability in length at age
 - e. 4X Haddock
 - f. Pollock
 - i. Understanding survey variability
 - ii. Understanding commercial catch variation
 - iii. Developing an index of juvenile abundance
 - iv. Mapping of juvenile pollock habitat in the region
 - g. Atlantic Halibut
 - h. Population Rights and the Use of Scientific Knowledge

B. Pubnico - Tuesday, 18 October 1994

1. Introduction
2. Research highlight in Stocks of Interest to Southwest Nova
3.
 - a. Oceanography and Fish Distribution
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 - i. Evaluation of catch rates for mobile and fixed gear
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 - iii. Fundian Channel haddock: which stock?
 - iv. Improving our models of fish populations
 - v. Effects of gear type/antibiotics on survival of tagged haddock
 - d. Georges Bank Yellowtail
 - i. A windfall or the basis for a new sustainable fishery?
 - e. 4X Cod
 - i. Distribution by sex during spawning
 - ii. Egg production
 - iii. Inshore acoustic survey
 - iv. Variability in survey trawl geometry
 - v. Retrospective patterns in assessment results
 - vi. Geographic variability in length at age
 - f. 4X Haddock
 - g. Unit 3 Redfish
 - h. Pollock
 - i. Understanding survey variability
 - ii. Understanding commercial catch variation
 - iii. Developing an index of juvenile abundance
 - iv. Mapping of juvenile pollock habitat in the region
 - i. Flatfish
 - i. Winter flounder tagging initiative
 - j. Atlantic Halibut
 - k. Population Rights and the Use of Scientific Knowledge

C. Yarmouth - Wednesday, 19 October 1994**1. Regional and Program Budget Overviews**

This will be similar to the presentation given last year but will include the current year's budget allocation.

2. Fisheries Management Issues

A summary of the December 1994 workshop will be given, as well as plans for the second workshop early next year.

An overview of the Regional Advisory Process, in which the technical issues of management are reviewed, will be presented.

3. 4X Inshore Survey

A large part of the inshore area of 4X is not surveyed by the summer bottom trawl survey. The plan to conduct a comprehensive survey of this area in 1995 will be presented.

4. 4X-5Z Cod Programs

A number of activities were conducted this year, not least of which being the tagging study. These will be presented and any results to date discussed.

5. 4X-5Z Haddock Program

Current efforts to obtain the best possible view of the stock abundance will be presented.

6. Pollock Program

An overview of the program will be provided.

7. 4X Flatfish Program

This program was not discussed last year. Therefore, an overview of the state of our knowledge will be presented along with the 1994/95 research program.

8. Unit 3 Redfish Program

As with flatfish, this program was not discussed last year. Therefore, an overview of the state of our knowledge will be presented along with the 1994/95 research program.

9. Other Species

D. Dartmouth - Wednesday, 16 November 1994**1. Regional and Program Budget Overviews**

This will be similar to the presentation given last year, but will include the current year's budget allocation.

2. Fisheries Management Issues

A summary of the December 1993 workshop will be given, as well as plans for the second workshop early next year.

An overview of the Regional Advisory Process, in which the technical issues of management are reviewed, will be presented.

3. Stock Specific Programs

Scientists will be available to discuss the details of their programs. These will include:

- 4VsW Cod
- Cod/Seal Interaction
- 4TVW Haddock
- Pollock
- Flatfish
- Redfish
- Silver Hake
- Georges Bank Stocks
- Trends in the Environment and Effect on Fish Distributions
- Ecosystem Management

This list is not meant to be all inclusive as the intent is to obtain input from industry on all programs of interest.

E. Sydney - Tuesday, 29 November 1994**1. Regional and Program Budget Overviews**

This will be similar to the presentation given last year, but will include the current year's budget allocation.

2. Fisheries Management Issues

A summary of the December 1993 workshop will be given, as well as plans for the second workshop early next year.

An overview of the Regional Advisory Process, in which the technical issues of management are reviewed, will be presented.

3. Stock Specific Programs

Scientists will be available to discuss the details of their programs. These will include:

4Vn Cod (sentinel fishery, stock mixing)

4VsW Cod

Cod/Seal Interaction

4TVW Haddock

Pollock

Flatfish

Trends in the Environment and Effect on Fish Distributions

This list is not meant to be all inclusive as the intent is to obtain input from industry on all programs of interest.

APPENDIX II. List of Participants**A. Shelburne - Monday, 17 October 1994**

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Gary Dedrick	SWFGA	
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B. Pubnico - Tuesday, 18 October 1994

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C. Yarmouth - Wednesday, 19 October 1994

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Claude d'Entremont	Inshore Fisheries Ltd.	(902) 762-2522
Yvon d'Entremont	Inshore Fisheries Ltd.	(902) 762-2522
Jean-Guy d'Entremont	Inshore Fisheries Ltd.	(902) 762-2522
Brian Giroux	SFMGA	(902) 742-6732
William Williams	SWFG	(902) 656-2595
John Decker	SWFG	(902) 656-2404
Clarrie MacKinnon	DFO/NS	(902) 424-4560
Loran Smith	4X Class-B	(902) 637-2272
Evan Walters	SFIFA	(902) 637-3276
Joe Fralic	SSGFA	(902) 354-5682
Chris Cooper	DFO/Halifax	(902) 426-7239
Arnold Muise	DFO/NS	(902) 762-2846

D. Dartmouth - Wednesday, 16 November 1994

Name	Affiliation	Telephone No.
Joe Hunt	DFO/STABS	(506) 529-8854
W. Watson-Wright	DFO/STABS	(506) 529-8854
Fred Page	DFO/STABS	(506) 529-8854
Ed Trippel	DFO/STABS	(506) 529-8854
John Neilson	DFO/STABS	(506) 529-8854
Chris Annand	DFO/BIO	(902) 426-3514
Robert Branton	DFO/BIO	(902) 426-3537
Kees Zwanenburg	DFO/BIO	(902) 426-3310
Bob Mohn	DFO/BIO	(902) 426-4592
Steve Campana	DFO/BIO	(902) 426-3233
Paul Fanning	DFO/BIO	(902) 426-3190
Ralph Halliday	DFO/BIO	(902) 426-3240
Steve Smith	DFO/BIO	(902) 426-3317
Bob O'Boyle	DFO/BIO	(902) 426-4890
Ulf Snarby	MV Osprey Ltd.	(902) 747-2211
Dave Bolliver	Seafreeze Foods	(902) 469-5004
Bill Murphy	Mersey Seafoods	(902) 354-3467
Michael O'Connor	National Sea Products	(902) 634-3565
John Andrews	SPANS	(902) 463-7790

E. Sydney - Tuesday, 29 November 1994

Name	Affiliation	Telephone No.
Bob O'Boyle	DFO/BIO	(902) 426-4890
Eric Trimm	Fisherman	(902) 733-2530
Greg Organ	North of Smokey Fishermen's Assoc.	(902) 336-2212
Robert Courtney	North of Smokey Fishermen's Assoc.	(902) 383-2142
Dwight Neal	North of Smokey Fishermen's Assoc.	(902) 285-2685
William Newman	DFO/Sydney	(902) 564-7665
Lloyd Robicheau	Three Fathom Harbour Fisherman	(902) 827-4413
Randy Baker	FSRS	(902) 889-3468
Arthur Cartwright	Fisherman	(902) 794-8412
Adolphe Kehoe	DFO/NS	(902) 226-2787
Herb Nash	MFU, Fisherman	(902) 849-8216
Hilary Gracie	Alder Point	(902) 736-1578
Chris Cooper	DFO/Halifax	(902) 426-7339
Kevin Nash	4Vn Sentinel Fishery Assoc.	(902) 849-7043
Tim Lambert	DFO/BIO	(902) 426-3872
Paul Fanning	DFO/BIO	(902) 426-3190
Steve Campana	DFO/BIO	(902) 426-3233
Richard Gerrow	Fisherman	(902) 736-2505
Mac Schrader	Fisherman	(902) 525-2765
George Whalen	4Vn Hook Line Assoc.	(902) 849-3772