REPORT OF THE
FIFTH ANNUAL MEETING
OF THE NORTH AMERICAN COMMISSION

17-18 February 1988
MONTREAL, CANADA

13-17 June 1988
REYKJAVIK, ICELAND

NORTH AMERICAN COMMISSION

COMMISSION NORD-AMERICAINE

CHAIRMAN:	DR FRANK CARLTON (USA)
VICE-CHAIRMAN:	DR GEORGES NADEAU (CANADA)
RAPPORTEUR:	MS LOUISE COTE (CANADA)
SECRETARY:	DR MALCOLM WINDSOR

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REPORT OF THE FIFTH ANNUAL MEETING OF THE NORTH AMERICAN COMMISSION OF THE NORTH ATLANTIC SALMON CONSERVATION ORGANIZATION 17-18 FEBRUARY 1988, MONTREAL, CANADA AND 13-17 JUNE 1988, REYKJAVIK, ICELAND

1. OPENING OF THE MEETING

1.1 The meeting was opened on 17 February 1988 by Dr Frank Carlton, Chairman of the North American Commission. Opening statements were made by the representative of Canada (Annex 1), the representative of the European Economic Community (Annex 2) and the representative of the United States (Annex 3).

1.2 The list of participants is given in Annex 4.

2. ADOPTION OF THE AGENDA

2.1 The Commission adopted its agenda, NAC(88)7 (Annex 5).

3. ELECTION OF OFFICERS

3.1 The Commission elected Mr Howard Larsen (USA) as its new Chairman and Dr Gaby Ward (Canada) as its new Vice-Chairman.

4. NOMINATION OF A RAPPORTEUR

4.1 The Commission nominated Ms Louise Cote (Canada) as its rapporteur for the 1988 meeting.

5. REVIEW OF THE 1987 FISHERY

5.1 Canada tabled its 1987 Atlantic Salmon Management Plan NAC(88)5,(Annex 6).

5.2 The representative of Canada provided a document on Canadian catch statistics from 1960-1987, NAC(88)3 (Annex 7), and a document prepared by the Canadian Atlantic Fishery Scientific Advisory Committee (CAFSAC) on the status of Atlantic salmon stocks in Canada, NAC(88)4 (Annex 8).

5.3 The total 1987 Canadian Atlantic salmon catch was 1,731 tonnes, 172 tonnes above the 1986 harvest, but 15% below the previous 20 year mean of 2,037 tonnes. Most of the increase over 1986 was in the commercial salmon fishery of Southern Labrador, northeast Newfoundland and Western Newfoundland. The Canadian representative indicated that few U.S. fish are known to be harvested on the west coast of Newfoundland and that, based on marine tagging studies in the St Anthony area in 1979 and 1980, no U.S. fish were reported from this site; it was in the St Anthony area that most of the catch increase occurred in 1987. As well, salmon in this fishing area are predominantly (90+%) river age 3 or older smolts indicating northern river origins. Therefore, Canada's preliminary

conclusion was that increased catches in Newfoundland and Labrador could not be attributed to U.S. origin salmon and are primarily an indication of abundance of northern origin salmon available to the fisheries.

5.4 A presentation on the work of CAFSAC was provided by the Canadian Delegation. The U.S. noted that catches in areas 3 and 4 (see Annex 8) have increased and that this will be of concern to them in the long-run. The representative of Canada mentioned that no conclusions could be drawn before the advice from ICES is available.

5.5 The representative of the USA reviewed the 1987 U.S. catch statistics which involved only recreational rod and reel fishing. The total catch in Maine rivers was 328 fish, a reduction of 47% from the 1986 catch. He also advised on the preliminary estimates of total run size for rivers undergoing restoration work in the USA. The decrease in total run in the U.S. was 38% from 1986 to 1987 due primarily to a decrease in run size of the Penobscot river of 45%. However, an increase in the percentage of multi-sea-winter salmon was noted. A preliminary summary of the 1987 fishery was provided, NAC (88)8 (Annex 9).

6. ACFM REPORT FROM ICES ON SALMON STOCKS "SALMON IN THE NORTH AMERICAN COMMISSION AREA"

6.1 At the June meeting, the Chairman of the ACFM, Mr Bernard Vaske, presented the 1988 scientific advice from ICES relevant to the North American Commission, CNL(88)14 (Annex 10). The representative from Canada received confirmation that the overall harvest reduction in Zones B and C was connected with the October closure.

7. REPORT OF THE BILATERAL SCIENTIFIC WORKING GROUP ON SALMONID INTRODUCTIONS AND TRANSFERS

7.1 At the February 1988 meeting, the Canadian Co-Chairman of the Bilateral Scientific Working Group on Salmonid Introductions and Transfers presented a report on the activities of the Working Group since June 1987, NAC(88)6 (Annex 11). Sub-groups have been established and their primary task is to develop protocols related to the introductions and transfers of salmonids in the NAC area. The final report of protocols is expected to be available by March 1989. The US representative mentioned that several States support the policy and are prepared to respond positively by establishing regulatory measures which will strengthen controls on introductions and transfers. The Canadian representative stressed that the progress made in this Working Group was significant and that Canada had the support of all eastern provinces and Ontario to cooperate with this programme. Canada also indicated that the introductions of some 22 shipments of salmonids to the Eastern Seaboard from western US, Asia and Europe, in the past five years, were cause for concern. It was hoped that, until the protocols were developed with all Parties, a moratorium could be imposed on such shipments. The US representative indicated that the US authorities may be in a weak position to impose a moratorium due to the uncertainty of the legal implications.

7.2 At the June 1988 meeting, the American Co-Chairman of the Bilateral Scientific Working Group gave a further update on the work of the Working Group. He advised that part of the work was still on-going and that the Report was not ready for implementation. A synopsis was presented to the Council in the form of a working paper, CNL(88)28 (Annex 12). He also advised that before any implementation could be

envisaged various sub-groups would have to be established. ICES will also be invited to participate before completion of the Report in 1989. In Canada, controls on inventories would fall under Federal regulations while in the US they would fall under both individual State and Federal regulations. Penalties, of which NASCO will be kept apprised, will then be imposed.

8. REVIEW AND DISCUSSION OF THE PROPOSED 1988 CANADIAN AND U.S. SALMON MANAGEMENT MEASURES AS THEY RELATE TO THE MANDATE OF THE COMMISSION AND TO THE FINDINGS OF THE ACFM REPORT FROM ICES

8.1 At the February meeting, the U.S. representative advised that no major changes were planned for 1988 in U.S. management and restoration measures. However, further restriction proposed by the New England Fishery Management Council had been approved by the Secretary of Commerce (effective March 17) whereby salmon cannot be taken within 3-12 miles from the coast.

8.2 The Canadian representative explained that Canada is entering the last year of its 5-year management plan and that the 1988 plan will therefore be a continuation of the 1987 plan. He repeated the guiding principles of this plan, the sacrifices that it has imposed on Canadian fishermen and its costs to the Canadian government. He also stressed that the last step of the mandatory tagging programme (for the recreational fishery of Newfoundland/Labrador) was to be completed this year. The Canadian representative also explained that there was considerable pressure domestically, particularly from commercial fishing interests in the maritimes, to relax the plan. However, the Canadian government intends to continue with its management measures by developing a long-term salmon management plan for 1989 and beyond and that the interception of U.S. origin salmon by Canadian fishermen will be part of the discussions.

8.3 The U.S. representative indicated that he was pleased to see that Canada had no intention of relaxing management measures in the last year of the plans' implementation. He trusted that the plan would be approved without changes from the previous year. He stressed that the interception of U.S. fish in the Canadian fishery remains of concern especially in the context of the increase in the Canadian catches. He mentioned that there may be ways of reducing further interceptions of U.S. fish without imposing restrictions on the Maritime fishery. The U.S. remains concerned, however, about the increase in catches in the Newfoundland commercial fishery which is an open fishery with no effort limitation. This provides for a potential increase in catches of U.S. origin fish. The report of ICES Working Group may provide good indications of further measures which could be taken.

8.4 The U.S. representative further indicated that he saw opportunities for more cooperation between Canada and the U.S. in the development of the Canadian plan for 1989 and beyond. The U.S. representative welcomed the opportunity to have some constructive input.

8.5 Discussion on this issue continued at the June 1988 meeting whereby the US representative indicated that, although changes in the Canadian regulations have shown some encouraging signs in 1986 in the Maine and Connecticut rivers, the issue was troubling due to the increase, over the long term average, of the Newfoundland and Labrador catches. He added that the US were particularly preoccupied that the change in Canadian regulations do not necessarily translate into a reduction of effort and that the regulatory measures still enable the Canadian fishery to increase. This

unrestricted effort is of concern since it could mean an increase in the take of US origin fish. He added that benefits of an early closure are offset by the Canadian unrestricted effort.

8.6 The Canadian representative noted that it was too early to comment on the increase of the 1987 fishery until further information from ICES could be provided, but that it was clear that the 15 October closure had a dramatic effect in area B. These results are expected to continue in future. The tagging programme carried out from 1969 to 1980 in area A indicated that most fish were from Northern Canadian rivers.

8.7 The US representative tabled a proposal on regulatory measures for the Canadian fishery, NAC(88)12 (Annex 13) which calls for the establishment in 1989 of a maximum allowable catch of 416 t for the fishery in areas A and B based on average catches from 1978-87. Canada agreed to take this proposal into consideration.

9. IMPACT OF ACID RAIN ON ATLANTIC SALMON

ACFM Report from ICES

9.1 The Chairman of the ACFM, Mr Bernard Vaske, presented a summary of the relevant sections of the ICES report and indicated that the estimated number of fish lost yearly to acidification has been revised based on more conservative measures. Conclusions however are still very uncertain.

9.2 The US representative noted that the Working Group report did not refer to the various causes of acidification. A recent Canadian report has indicated many possible sources other than acid rain and that the US report has identified sources referring to localised activities other than smoke-stacks. These reports leave room for interpretation and it seems that more explanations are needed before the problem can be dealt with efficiently.

9.3 The Canadian representative advised that the Canadian report of the Department of Environment was prepared as a working document and the Canadian government was of the view that this paper still has to be discussed and reviewed.

Review of Mitigative Measures

9.4 At the February meeting, the Canadian representative advised that the effects of US acid rain emissions on salmon habitat continue to be of the utmost importance to Canada. In Canada, an agreement has now been reached between the Federal government and all the eastern provinces for a reduction of acid rain emissions. The Canadian representative reminded the US that, following the meeting between President Reagan and Prime Minister Mulroney, Canada was optimistic that actions would be taken by the two countries. He reiterated that, according to some estimates, an important number of Canadian salmon are lost each year due to acidification. Canada was very disappointed by the conclusions of the US National Acid Precipitation Assessment Programme (NAPAP) report which, according to Canadian scientists, were misleading, flawed, incomplete and contained serious misrepresentations and omissions. A letter from the Canadian Minister of Environment had been sent to the US authorities expressing Canada's disappointment. The representative of Canada, therefore, asked if any action had been taken by the US Commissioners since last June to stress to the US government the need for urgent action.

9.5 The US representative advised that the question of acid rain was much broader than its effect on Atlantic salmon and that the US was working at identifying the nature of the problems since there was considerable difference of views on the subject and that more evidence was needed before actions could be taken. He also advised that the issue has been elevated to the highest level of government in the US. The NASCO Commissioners will pass the findings of the ICES Working Group on to the US authorities.

9.6 The US representative also noted that acidification was, in great part, due to smoke-stack industries and that acidification from Canada might also affect the US environment.

9.7 The subject of mitigative measures was further discussed at the June meeting and the Canadian representative noted that, although smoke-stacks may not be the only cause of acidification, they are, without doubt, the major ones. He mentioned that the effects of acid rain on the environment remain a major concern for the Government of Canada. The estimated number of salmon lost, although not of the same magnitude as anticipated earlier, is still important.

9.8 The US representative indicated that the US is in no way minimizing the effect of acidification but that solid and conclusive scientific information is still lacking.

9.9 The Canadian representative repeated his previous reservation regarding the NAPAP report noting that the US have themselves admitted some of the flaws and are in the process of rewriting the executive summary. He repeated some of the concerns expressed in the speech by the Canadian Prime Minister on the occasion of the Joint Session of the US Congress on 27 April. He noted that although more knowledge is desirable, the information available now is sufficient to initiate regulatory measures.

9.10 The US representative noted that the disagreement was not related to the problem but to the solutions. He reiterated that conclusive scientific information was still lacking. ICES has revised its 1987 figure downwards, the Canadian Department of Environment report was under review and that the NAPAP report was also being revised. Furthermore the resolution of this problem was not in the purview of this Commission.

9.11 The Canadian representative suggested that since more knowledge was needed, appropriate questions on the causes of acid rain and its impact should be referred to ICES. The US expressed serious doubts regarding the competence of ICES in this area.

9.12 The ICES representative noted that ICES has expertise in areas other than stock assessment, notably the Advisory Committee on Marine Pollution (ACMP) and that if the work necessitated the establishment of a different Working Group, the two countries involved could provide the necessary experts.

9.13 The US representative insisted that no question be put to ICES before determining if the expertise existed within that organization.

10. RECOMMENDATIONS TO THE COUNCIL CONCERNING REQUEST TO ICES FOR SCIENTIFIC RESEARCH AND SCIENTIFIC ADVICE

10.1 The Commission reviewed and accepted the relevant section of CNL(88)40 (Annex 14) and agreed to recommend it to Council as part of the annual

request for scientific advice to ICES.

11. DATE AND PLACE OF THE NEXT MEETING

11.1 The Commission agreed to hold the first round of its Sixth Annual Meeting in the United States from 15-16 February 1989.

12. OTHER BUSINESS

12.1 At the February meeting, the Canadian representative announced that the tag reward in Canada would be increased from $8.00 to $10.00 (Cdn). The US representative also reported an increase in its tag return reward from $8.00 to $15.00 (US). The U.S. representative referred to the wider review of tagging and tag rewards being prepared by the Secretary and to be considered by the Council.

12.2 The Chairman referred to the need to advise the Council formally of the progress made by the North American Commission on Salmonid Introductions and Transfers as this may be of wider significance. The Commission agreed that this step should be taken.

13. CONSIDERATION OF THE DRAFT REPORT OF THE MEETING

13.1 The Commission agreed that a report of the meeting would be agreed by circulation of a draft to the Chairman and Heads of Delegation after the meeting.

14. ADOPTION OF A PRESS RELEASE

14.1 The Commission agreed to issue press related information in the Council Press Release.

17 FEBRUARY 1988
MONTREAL, CANADA

ANNEX 1

NORTH ATLANTIC SALMON CONSERVATION ORGANIZATION

OPENING STATEMENT MADE BY THE REPRESENTATIVE OF CANADA

It is a great pleasure for me to welcome you to Montreal and I hope that the warmth of the people you will be meeting over the next two days will make up for the rather cold weather condition.

I should take this opportunity to introduce my new Commissioners. Dr Carter has been reconfirmed as Commissioner, after having sat as an alternate for some years. He is very well known to most people around the table.

Mr McCrea is a lawyer from Nova Scotia involved in the recreational fishery for some time; he has just been appointed as an Alternate Commissioner.

Dr Ward will not be with us as she has given birth to her first son a week ago. She is a fisheries biologist teaching in Quebec City and I am sure we will benefit from this kind of experience.

I wish to seize this opportunity to express my gratitude to the outgoing Commissioners for Canada, Mr McCurdy and Mr Nadeau, who may participate as part of the Canadian delegation from time to time. The rest of my delegation is reasonably well known to you and you will have an opportunity later on to meet them again.

You will recall that Canada is now entering the last year of its five-year conservation strategy. We will be looking shortly at developing some longer term plan, not necessarily five years. In this last year of the current five-year plan we are emphasizing that we intend to stay the course. We have emphasized that with our own industry and we are not looking for dramatic domestic changes in this last year. We are however open to suggestions for modifications as we were when we introduced the October 15th closure.

You are probably also aware that the salmon returns projected by our scientists last year in some of our major Maritime rivers simply did not materialize. I think that this was also experienced in a number of American rivers as well. Spawning requirements were barely met in some rivers while other rivers, like the St John's river, received less than 65 percent of their target requirements. We still have some areas and some serious cause for concerns, even though our harvest in some other areas were up quite significantly.

I understand that the U.S. has also experienced some difficulties in its rivers. I am sure that Mr Peterson will want to comment on the situation in some detail.

I should not conclude my remarks without a reference to the continuing problem of acid rain. This is an issue which is of the utmost importance for us in Canada, from a salmon perspective, but in a much broader form as well.

You will be interested in knowing that Canada has already started planning for salmon management in 1989 and beyond and that as usual the interception of U.S.-origin salmon by Canadian fishermen will be one of the major considerations and one of the issues on the agenda.

Again welcome to everyone. I hope the next two days will yield some fruitful results.

17 FEBRUARY 1988
MONTREAL, CANADA

ANNEX 2

NORTH ATLANTIC SALMON CONSERVATION ORGANIZATION

OPENING STATEMENT MADE BY THE REPRESENTATIVE OF THE EUROPEAN ECONOMIC COMMUNITY

The European Community welcomes this opportunity of participating at the 5th Annual Meeting of the North American Commission in Montreal and would thank the Canadian authorities for their organization of the meeting and the facilities put at our disposal.

On matters of principle, may I say that the Community maintains its views on its status within this Commission as expressed at previous Commission meetings. However, it is not an issue for this meeting.

On matters of substance, the Community considers that this Commission has taken important initiatives within its area of responsibility by addressing issues other than purely regulatory measures.

Specifically, with regard to the pioneering work of NAC on salmonid introductions and transfers, the Community would hope that this Commission would consider broadening the discussions on this issue, notably, by referring it to the NASCO Council and, by extension, to the other Regional Commissions.

17 FEBRUARY 1988
MONTREAL, CANADA

ANNEX 3

NORTH ATLANTIC SALMON CONSERVATION ORGANIZATION

OPENING STATEMENT MADE BY THE REPRESENTATIVE OF THE UNITED STATES

The United States extends its appreciation to the Government of Canada, in particular Louise Cote for her efforts on our behalf, for hosting the Fifth Annual Meeting of the North American Commission. We look forward to a very productive meeting. The U.S. looks forward to working with the newly appointed Commissioners. In addition to our official interactions we welcome the opportunity to build personal friendships. This was one of the most rewarding aspects of dealing with your predecessors. Not only did we have frank and productive interchanges as Commissioners, but I believe we built lifetime friendships that outweigh many of the Commission concerns. I certainly look forward, as does the entire U.S. delegation, to building that same kind of relationship with the new Commissioners.

We appreciate the comments of the representative from Canada with regard to the new five-year plan. At last year's regular annual meeting, the U.S. expressed concern as to how we could move forward together in dealing with the problems of salmon management in the Commission area and requested initiatives on behalf of Canada. Canada's response that a new plan would be undertaken and that there would be opportunities for the United States to be involved is appreciated. We look forward to presenting our views with the expectation that reasonable fisheries management plans are put forward that will protect the interest of fishermen in Canada while protecting the interests of the U.S. Also, in light of the comments by the representative of the EEC, this Commission can be proud that it is taking initiatives well in advance of concern raised in the Council or other Commissions on issues such as acid rain and salmonid introductions and transfers. I believe that these are extremely important issues to NASCO. They are broad and sweeping and relate to the problems of conservation and management of salmon and not just interceptory fisheries, quotas, or regulations. I believe this Commission has come a long way and has, in fact, bridged some of its more difficult problems by finding areas in which we have common interest, and in which we could devote our cooperative resources to furthering those common interests.

The U.S. delegation looks forward to this meeting and for continuance of the constructive processes that we have developed over the past four years. In closing, Mr Chairman, for the benefit of the new Commissioners from Canada, I would like to formally introduce the Commissioners of the U.S. I am Allen Peterson, Government official with the Department of Commerce, National Marine Fisheries Service, Mr R A Buck is a long time advocate of salmon conservation and is the founder/Chairman of the Restoration of Atlantic Salmon in America. Our Chairman, Dr Frank Carlton, is one of the founders and past President of the National Coalition for Marine Conservation.

JUNE 1988
REYKJAVIK

ANNEX 4

NORTH ATLANTIC SALMON CONSERVATION ORGANIZATION

FIFTH ANNUAL MEETING OF THE NORTH AMERICAN COMMISSION
17-18 FEBRUARY 1988, DELTA MONTREAL HOTEL,
MONTREAL, CANADA
13-17 JUNE 1988, REYKJAVIK, ICELAND

LIST OF PARTICIPANTS

* Denotes Head of Delegation

MEMBERS OF THE COMMISSION:

CANADA

*MR BILL ROWAT	Representative Department of Fisheries and Oceans, Ottawa, Ontario
DR WILFRED CARTER	Representative Atlantic Salmon Federation, St Andrews, New Brunswick
DR GABY WARD	Representative Champlain College, Quebec
MR MARK MCCREA	Representative (Alternate) Truro, Nova Scotia
DR LARRY MARSHALL	Department of Fisheries and Oceans, Halifax, Nova Scotia
DR REX PORTER	Department of Fisheries and Oceans, St John's, Newfoundland
DR DAVID MEERBURG	Dept of Fisheries and Oceans, Ottawa, Ontario
MR BERNARD VEZINA	Dept of Fisheries and Oceans, Ottawa, Ontario
MS LOUISE COTE	Dept of Fisheries and Oceans, Ottawa, Ontario
MR MALCOLM REDMOND	Department of Natural Resources and Energy, Fredericton, New Brunswick
MR BARRY JONES	Department of Fisheries, Fredericton, New Brunswick
MR GLENN BLACKWOOD	Department of Fisheries, St John's, Newfoundland
MR MICHEL BROUILLARD	Ministère du loisir, chasse et pêche, Quebec
FATHER DES MCGRATH	Fishermen, Food and Allied Workers Union, St John's, Newfoundland

MR ALEX BIELAK	Atlantic Salmon Federation, Montreal, Quebec
USA	
*MR ALLEN PETERSON	Representative National Marine Fisheries Service, Woods Hole, Mass.
MR RICHARD BUCK	Representative Restoration of Atlantic Salmon in America Inc, Dublin, New Hampshire
DR FRANK CARLTON	Representative National Coalition for Marine Conservation, Savannah, Georgia
DR VAUGHN ANTHONY	National Marine Fisheries Service, Woods Hole, Mass.
MR GILBERT RADONSKI	Sports Fishing Institute, Washington, DC
MR STETSON TINKHAM	U.S. Department of State, Washington, DC
MR ARTHUR NEILL	National Marine Fisheries Service, Woods Hole, Mass.
DR PAUL RAGO	US Department of State, Washington DC
DR JAMES WEAVER	US Fish and Wildlife Service, Kearneysville, WV
MR ALFRED MEISTER	Atlantic Salmon Commission, Bangor, Maine
MR ROBERT JONES	Department of Environmental Protection, Hartford, Connecticut
MR WILLIAM VAIL	Maine Sea Run Salmon Council, Maine
MR JOHN PHILLIPS	Atlantic Salmon Federation, Ipswich, Mass.
MS CHRISTINA TERPAK-MALM	National Marine Fishery Services, Washington
MR JAMES MCCALLUM	Merchant Marine & Fisheries Committee, US House of Representatives, Washington
MR HAL LYMAN	Salt Water Sportsman Inc, Boston, Mass.
DR DAVID GOLDTHWAITE	US Fish and Wildlife Service, Newton Corner, Mass.
MR HOWARD LARSEN	US Fish and Wildlife Service, Newton Corner, Mass.
MR JEFF PIKE	Merchant Marine & Fisheries Committee, US House of Representatives, Washington
MR WILLIAM BRENNAN	Department of Marine Resources, Augusta, Maine
MR JAY DEHMLOW	United States Embassy, Reykjavik

OBSERVERS - PARTIES

EEC (+)

*MR HENRIK SCHMIEGELOW	Representative Fisheries Directorate-General, EEC Commission, Brussels
MR JOHN SPENCER	Representative Fisheries Directorate-General, EEC Commission, Brussels
DR DICK SHELTON	Department of Agriculture and Fisheries for Scotland, Pitlochry
DR KEVIN O'GRADY	Ministry of Agriculture, Fisheries and Food, London
MR IAN WHITELAW	Department of Agriculture and Fisheries for Scotland, Edinburgh
MR NICK BROWN	Ministry of Agriculture, Fisheries and Food, London
MR TED POTTER	Ministry of Agriculture, Fisheries and Food, Lowestoft
MR BILL MALCOLM	Department of Agriculture and Fisheries for Scotland, Edinburgh

OBSERVERS - NON PARTIES

ICES

DR EMORY ANDERSON	International Council for the Exploration of the Sea, Copenhagen
MR BERNARD VASKE	Institut fur Hochseefischerei und Fischverabeitung, German Democratic Republic

SECRETARIAT

DR MALCOLM WINDSOR	Secretary
DR PETER HUTCHINSON	Assistant Secretary

(+) NOTE 1:	Under Article 11, paragraph 2 of the Convention for the Conservation of Salmon in the North Atlantic Ocean the EEC has the right to submit and vote on proposals for regulatory measures concerning salmon stocks originating in the territories referred to in Article 18 of the same Convention.
NOTE 2:	Not all participants were present at both the Montreal and the Reykjavik meetings.

JUNE 1988
REYKJAVIK

ANNEX 5

NAC(88)7

NORTH ATLANTIC SALMON CONSERVATION ORGANIZATION

FIFTH ANNUAL MEETING OF THE NORTH AMERICAN COMMISSION 17-18 FEBRUARY 1988, AT THE DELTA HOTEL, MONTREAL, CANADA AND 13-17 JUNE 1988, REYKJAVIK, ICELAND

AGENDA

1. Opening of the meeting
2. Adoption of the agenda
3. Election of officers
4. Nomination of a rapporteur
5. Review of the 1987 fishery
6. ACFM report from ICES on salmon stocks "Salmon in the North American Commission area"
7. Report of the Bilateral Scientific Working Group on salmonid introductions and transfers
8. Review and discussion of the proposed 1988 Canadian and U.S.salmon management measures as they relate to the mandate of the Commission and to the findings of the ACFM report from ICES.
9. Impact of acid rain on Atlantic salmon
   (a) ACFM report from ICES
   (b) Review of mitigative measures
10. Recommendations to the Council concerning request to ICES for scientific research and scientific advice
11. Date and place of the next meeting
12. Other business
13. Consideration of the draft report of the meeting
14. Adoption of a press release

JUNE 1988
REYKJAVIK

ANNEX 6

NORTH ATLANTIC SALMON CONSERVATION ORGANIZATION

NORTH AMERICAN COMMISSION

PAPER NAC(88)5

1987 ATLANTIC SALMON MANAGEMENT PLAN

1987 ATLANTIC SALMON MANAGEMENT PLAN

Guiding Principles and Major Elements

Atlantic Fisheries Service
Department of Fisheries and Oceans
May 1987

Published by:

Information and Publication Branch
Communications Directorate
Department of Fisheries and Oceans
Ottawa, Ontario
K1A 0E6

DFO/3504

Cat. No. Fs 1-31/1987E

ISBN 0-662-15519-X

"Egalement disponible en français
sous le titre: PLAN DE GESTION
DU SAUMON DE L'ATLANTIQUE 1987."

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1987 ATLANTIC SALMON MANAGEMENT PLAN

The 1987 Atlantic Salmon Management Plan is divided into major components. This permits easier reference to the appropriate measures applicable in each geographic region and Atlantic Salmon Management Zones.

The News Release of the plan is contained in the first section. The second section includes the principles which have been adopted, after consultation with all parties involved, for the management of the salmon fishery. The next section presents the major elements contained in the 1987 Atlantic Salmon Management Plan followed by the general policies and measures regarding licensing, tagging, gear, enforcement, habitat and enhancement in Gulf, Scotia-Fundy, and Newfoundland regions. Specific management initiatives and guidelines for particular salmon management zones are also included.

Fisheries and Oceans | Pêches et Océans

News Release
Communiqué

NR-HQ-87-28E

FOR IMMEDIATE RELEASE
Monday March 23, 1987

1987 RECREATIONAL AND COMMERCIAL ATLANTIC SALMON MANAGEMENT PLAN ANNOUNCED

OTTAWA - Fisheries and Oceans Minister Tom Siddon announced today details of the 1987 Atlantic Salmon Management Plan. Conservation and restoration remain the underlying principles of Atlantic salmon management in the fourth year of the program begun in 1984 to rebuild threatened Atlantic salmon stocks.

"This year's plan was developed in consultation with all the eastern provinces and user groups," said Mr. Siddon. "I want to especially acknowledge the contribution made by the provincial ministers of fisheries."

"We are now in a critical phase of the program," said the Minister. "Stocks have begun to show signs of replenishment. We must maintain our course and not diminish the effects of the tough conservation measures that have been shared by all user groups."

The federal government introduced a voluntary commercial licence buy-back program in July 1986, in conjunction with the provinces of New Brunswick and Nova Scotia. The final deadline for application was February 16, 1987.

"Almost 80 per cent of commercial salmon licence holders in the three Maritime provinces applied to the buy-back program," said the Minister. "Our offers were generous and I am pleased so many chose to participate. Because salmon stocks have not yet adequately recovered, I do not foresee a reopening of the commercial fishery in the Maritimes in the near future."

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Canada

The 1987 plan maintains the 1986 recreational salmon fishing seasons in the Maritime provinces as well as in Newfoundland and Labrador, allowing for minor adjustments at the local level, but conservation and enforcement measures will be strictly applied. Anglers will not be permitted to keep large salmon. "The large salmon, including repeat spawners, must be permitted to survive in the largest numbers possible," said Mr. Siddon.

The two-grilse-a-day restriction will continue to apply, while under the hook-and-release program anglers will again this year be encouraged to use barbless hooks and to improve catch and release methods. Bag limits will remain unchanged in all provinces.

The Minister said that despite the increase in large salmon returning to some rivers in New Brunswick and Nova Scotia in 1986, the commercial fishery closure in the Maritime provinces that was in effect in 1985 and 1986 will be maintained. "The scientific advice we have received warns that this high return rate may not necessarily be repeated in upcoming years," said Mr. Siddon. "I cannot therefore consider reopening the commercial fishery and delaying potential long-term recovery."

"Most salmon stocks in Newfoundland and Labrador are healthier than those in the Maritimes," said the Minister. "In addition, there is much greater economic dependence in Newfoundland on the commercial fishery than upon the recreational fishery. The Newfoundland and Labrador commercial fishery season shortened in 1986, will therefore remain the same in 1987."

The 1987 commercial season will open on June 5 and closing dates will vary according to zone with the last closure date being October 15, 1987. Mandatory tagging, which was introduced in the Newfoundland and Labrador commercial fishery in 1986, will be extended to the recreational fishery in 1988. In the meantime, all salmon exported from Newfoundland and Labrador to other eastern provinces must be tagged before leaving the province.

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"Mandatory tagging of all Atlantic salmon has been in force in the Maritimes and Quebec for several years," said Mr. Siddon. "It is an effective enforcement tool and is part of the strategy to safeguard the progress we are making as a result of the sacrifices of all user groups."

"I also look forward to continuing cooperation with Indian Bands," said the Minister. "I am confident that Indian Bands will respect food fishing limits negotiated with the department. The department will work with their representatives to ensure that the salmon plan is respected."

Mr. Siddon noted that Canada's membership in the North Atlantic Salmon Conservation Organization (NASCO) has reaped some benefits.

"Greenland's quota of Atlantic salmon is still lower than it was several years ago," said the Minister. "Through NASCO, I will ensure that Canadian sacrifices will not be negated by overfishing outside Canadian waters."

"We are one year closer to our goals," said Mr. Siddon. "We must stay our course and maintain our commitment to this vital strategy which, in tandem with our new and rigorously applied habitat protection policy, sets the right conditions for regeneration of our Atlantic salmon. Our challenge now, and into the future as stocks rebuild, is to bring the greatest economic benefit possible to all Atlantic Canadians."

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1987 ATLANTIC SALMON MANAGEMENT PLAN

The 1987 Atlantic Salmon Management Plan is guided by the principles adopted by the Department of Fisheries and Oceans through consultations with the Atlantic Salmon Advisory Board and the provincial governments. It incorporates the three Regional Atlantic Salmon Management Plans which are developed in consultation with Regional Zone Management Advisory Committees. In addition, representations from interested associations and organizations were taken into consideration.

In the province of Quebec, the provincial government has delegated authority for the management of the salmon stocks in that province.

A. Principles

1. Conservation of Atlantic salmon stocks, particularly the large salmon component, remains the overriding priority in the management of this fishery.

2. The social and cultural importance of fishing to native communities which have traditionally harvested the resource for their own consumption is recognized and will be given priority after conservation.

3. The limited fishery for Atlantic salmon will be managed so as to distribute the benefits most effectively among the largest number of Canadians.

4. In the Maritime provinces, the importance of the recreational fishery will be given greater recognition based on the relatively larger potential benefits to be generated. However, there will be a continuing role for the commercial fishery. In Newfoundland & Labrador, it is recognized that there is much greater economic dependence upon the commercial fishery than upon the recreational fishery.

5. Allocation of Atlantic salmon stocks will be made by Management Zones and/or river system and according to interests and/or dependence of user groups and that of industries and communities deriving benefit from the harvestable resource.

6. Interception of migrating salmon in mixed-stock fisheries will be minimized where practical and feasible, by adjusting seasons, gear and area of fishing.

7. Harvesting of salmon by commercial fishing gear not licensed for salmon will be minimized by adjusting seasons, gear and area of fishing, and the retention of salmon caught under these circumstances will be illegal.

8. Access to all Atlantic salmon stocks will be regulated by all or a combination of the following: seasons, quotas, gear and licensing restrictions.

9. Atlantic salmon enhancement plans will be developed in concert with Atlantic Salmon Management Plans.

10. Atlantic salmon habitat will be protected and improved to allow for maximum stock production.

11. The practice of tagging salmon catches will be encouraged and expanded.

B. Major Elements

1. The 1987 commercial fishing seasons for the province of Newfoundland and Labrador will remain as in 1986. The fall fishery will again be closed on October 15. The fishing seasons will be:

   - Zones 1-2 (Labrador), 3-10, 11 (east), 14: June 5-October 15
   - Zone 13 and that portion of Zone 11 lying between Pass Island and Fox Point: June 5-July 10
   - Zone 12 Closed

   All other existing regulations and weekend closures will apply.

2. Only full-time fishermen will be eligible to hold salmon licences. In the future, fishermen who may be down-graded to the part-time categorization will have to regain their full-time categorization within two years in order to retain their eligibility to their salmon licence. During this two-year period, fishermen down-graded to part-time will be eligible to hold their salmon licence.

3. The commercial salmon fisheries in the Maritime Provinces will remain closed.

4. There will be no new commercial salmon fishing licences issued on an Atlantic-wide basis.

5. Transfers of commercial fishing licences will be allowed in the Maritime Provinces and in Newfoundland and Labrador among immediate family members on the condition that the recipients are full-time fishermen.

6. Only the retention of grilse will be permitted in the recreational fisheries for the provinces of New Brunswick, PEI, Nova Scotia and Newfoundland (excluding Labrador). All multi-sea winter salmon (63 cm and greater in length) hooked by anglers will be required to be released immediately with the least possible harm to the fish. The Province of Quebec will maintain this restriction for the bordering rivers within the Restigouche system as in 1984, 1985 and 1986.

7. Recreational fishing seasons in all Atlantic Provinces will remain as in 1986, subject to minor adjustment due to local conditions.

8. The seasonal bag limits along with the possession and daily limits in Nova Scotia, and New Brunswick will be maintained at 10, 6 and 2 respectively which will be required to be grilse. In P.E.I., the bag limits will remain at 5, 1, 1. In Newfoundland and Labrador, the bag limits will remain at 15 per season, as established in 1986, and 2 per day; the possession limit will remain at twice the daily catch limit in an unpreserved state.

9. The daily and seasonal salmon bag limits do not include any salmon that are hooked and subsequently released. However, on a daily basis, fishermen must stop fishing for salmon once they have retained the daily limit or have released a maximum number of fish equal to twice the daily limit.

10. During 1987, the tagging systems will be maintained in all the Maritime Provinces and in the commercial and native food fisheries of Newfoundland and Labrador. A full scale recreational tagging program will be extended to Newfoundland and Labrador in 1988. For 1987, all salmon exported from Newfoundland and Labrador to other eastern provinces will have to be tagged before leaving the province.

11. It will be illegal to retain, or be in possession of, salmon captured incidentally in non-salmon commercial gear. The Department of Fisheries and Oceans will review its priorities for inland and coastal enforcement to restrain any increase in poaching activity and to monitor other commercial fisheries which may be susceptible to incidental catches of Atlantic salmon. Innovative low cost and efficient enforcement activities will be considered and encouraged. Interest groups will be asked to assist enforcement personnel in this regard.

12. Negotiations will continue with native groups to review existing fishing quotas and establish such quotas where none exist, ensure the enforcement of regulations, and encourage the use of trap nets. Indian Bands will be asked to share in conservation efforts. Where possible, alternatives to salmon fishing will be considered. In New Brunswick, the Indian Bands who participated in a food fishery in 1986 will be offered the opportunity to change fishing gear to trapnets where feasible. Indian fisheries development projects will also be considered under the N.B. ERDA where these projects are deemed to be economically viable and directly contribute to conservation of salmon stocks.

13. During 1987 Salmon Enhancement Activities will be discussed with Provinces and user groups in the context of available funding.

14. The Department of Fisheries and Oceans will maintain its commitment to cooperate within the North Atlantic Salmon Conservation Organization (NASCO). Specifically, Canada will resist any attempts to increase the catch of North American salmon above the quota of 850t in West Greenland established by NASCO for 1986 and 1987. Canada will maintain the closure date of the Newfoundland Labrador fishery of October 15. This initiative is consistent with Canada's obligations under the North American Commission of NASCO.

1987 ATLANTIC SALMON MANAGEMENT PLAN

Regional Management Measures

A. LICENSING POLICIES

a) Scotia-Fundy and Gulf Regions (excluding Western Newfoundland and Labrador) -- Zones 15, 16, 17, 18, 19, 20, 21, 22, 23.

1. Commercial salmon fishermen will not be required to renew their licences in 1987.

2. Transfer of licences to another individual will not be permitted in 1987, except to immediate family members who are bona-fide or full-time fishermen. For purposes of this policy, immediate family members are husband/father, wife/mother, son/daughter and brother/sister.

3. Licences are not available for new entrants in this fishery.

4. Licences are only valid for the Management Zone specified.

b) Newfoundland Region and Western Newfoundland and Labrador Portion of Gulf Region -- Zones 1-14

1. In 1987, licences may be issued to those persons who, in 1986:

a) held commercial fishing licences; and

b) personally operated their specified commercial salmon fishing gear; and

c) were categorized as full-time fishermen or part-time fishermen since the 1985 season; and

d) were and still are full-time residents of the Salmon Management Zone in which they fished unless otherwise specified.

Note: Participation in the 1987 salmon fishery will not be a prerequisite to be eligible for a salmon licence in 1988. However, all fishermen will be required to renew their salmon fishing licences and meet the criteria outlined in c) and d) above.

2. Licences are only valid for the Fishing Area specified.

3. Transfer of licences to another individual will not be permitted in 1987, except between immediate family members who are full-time fishermen. For purposes of this policy, immediate family members are husband/father, wife/mother, son/daughter and brother/sister.

4. Fishing effort limits for each licensed fisherman will remain at 200 fathoms per licence in 1987.

5. Licences are not available for new entrants in this fishery in 1987.

6. On application, the holder of a set-net licence (fixed gillnet, trap net) may be permitted to move his gear to a new location provided it can be shown that circumstances have arisen which render the current location useless (i.e., wharf construction, dredging) and provided further that the new location will not adversely affect the fishery and/or salmon fishing set-net licences presently located in the area.

B. MEASURES TO PREVENT ATLANTIC SALMON BY-CATCH IN NON-SALMON COMMERCIAL GEAR

In all Atlantic provinces, it will be illegal to retain or be in possession of Atlantic Salmon caught by non-salmon commercial gear.

a) Provinces of New Brunswick, Nova Scotia and Prince Edward Island

1. Non-salmon commercial fishing gear includes all traps, weirs and gillnets used to fish for all finfish species.

2. All salmon caught incidentally in the above gear must be released immediately to the water.

3. In areas where the by-catch of salmon is significant, the commercial gear shall be re-located voluntarily and/or as instructed by a fishery officer.

b) Province of Newfoundland and Labrador

1. As in 1986, the incidental catch of salmon in traps and nets will be minimized by seasonal and area variations as required.

2. In cod traps, the seven inch (178 mm) mesh size for leaders and the prohibition of the use of monofilament will be strictly enforced. The top portion of groundfish gillnets has to be at least 5m underneath the surface of the water.

C. RECREATIONAL FISHERY

1. Size restrictions -- For the recreational fisheries Atlantic-wide (excluding Labrador and most of Quebec), the retention of multi-sea winter salmon will be prohibited (salmon 63 cm or greater in length). However, anglers will be permitted to hook and release multi-sea winter salmon.

Regions will continue media programs in cooperation with anglers' associations to ensure anglers are aware of proper release methods in order to ensure that the fish are released with the least possible harm. The use of barbless hook is encouraged.

2. Bag limits -- In 1987, the bag limits will be:

	N.B.	N.S.	P.E.I.	Nfld. and Labrador*
Season	10	10	5	15
Possession	6	6	1	2-day limit
Daily	2	2	1	2

*In Labrador, anglers are allowed to retain large MSW salmon.

The daily and seasonal salmon bag limits do not include any salmon that are hooked and subsequently released. However, on a daily basis, fishermen must stop fishing for salmon once they have retained the daily limit or have released a maximum number of fish equal to twice the daily limit.

Bag limits which were previously restricted to lower levels because of specific conditions will be maintained as such.

Anglers exhausting these daily or seasonal limits will not be permitted to fish for Atlantic salmon for the remaining portion of the period associated with the limit reached.

3. Black salmon fishery -- The grilse only restriction will apply again in 1987. The season will remain April 15 to May 15 in New Brunswick.

4. Season -- Recreational fishing seasons in all Atlantic Provinces will remain as in 1986, subject to minor adjustment due to local conditions.

D. TAGGING PROGRAM

During 1987, the tagging systems will be maintained in all the Maritime Provinces and in the commercial and native food fisheries of Newfoundland and Labrador. For 1987, all salmon exported from Newfoundland and Labrador to other eastern provinces will have to be tagged before leaving the province. Mandatory tagging will be extended to the Newfoundland and Labrador recreational fishery in 1988.

Where applicable, all salmon caught by licensed salmon fishermen will be tagged by applying a self-locking, tamper-proof plastic tag through the mouth and gill cavity of the fish. Each tag number will be recorded with the licence number issued to the fisherman for immediate identification of all legally harvested salmon.

The tags will be colour coded for each fishery. **Blue tags** will be used for the licensed recreational salmon fishery; **red tags** for the licensed commercial salmon fishery; and **orange tags** (yellow in Quebec) for the licensed Indian food fishery. **Brown tags** (green in Quebec) must be applied to fish caught for scientific-research purposes and for fish farming operations. A **green tag** (white in Quebec) will be used for Atlantic salmon imported into New Brunswick, Nova Scotia, and Prince Edward Island from areas outside these provinces. A green export tag will be applied

to salmon being exported from the Province of Newfoundland and Labrador and which are not yet tagged. A **yellow** tag issued by Parks Canada will be used for salmon captured in waters within national parks.

E. ENFORCEMENT ACTIVITIES

Where feasible in 1987, emphasis will be placed on protection and conservation of Atlantic salmon in both the marine and freshwater environment. Particular attention will be directed to the following:

1. commercial salmon log record reporting (where applicable);

2. salmon by-catch restrictions;

3. poaching activity in inland waters;

4. fish habitat protection;

5. salmon tagging requirements;

6. strict observance of closed times and closed areas.

In the Western Newfoundland portion of the Gulf Region, the "Dial-a-Poacher" program will be continued in 1987. A toll-free number (ZENITH-07057) has been established, and phones will be answered twenty-four hours a day.

The Newfoundland Region is also continuing its "Report-a-Poacher". Individuals can report suspected illegal fishing activity by dialing the 24-hour answered toll free number (1-800-563-7277).

F. RESOURCE ENHANCEMENT

In 1987, enhancement projects will be maintained with the objective of expanding and increasing efficiency where possible. The Department will continue to investigate enhancement potential and upgrade fishways.

There will be no new major enhancement projects undertaken in the Maritime Provinces and in Newfoundland. However, many regional and community enhancement projects will commence in 1987 such as constructions of incubation boxes, stream clearance, investigation of enhancement potential and upgrading of fishway facilities.

G. INTERCEPTION

Measures previously introduced to reduce the interception of mainland salmon will be maintained in 1987.

H. NATIVE FISHERY

Negotiations will continue with Native groups to ensure their cooperation on conservation initiatives. Wherever possible, they will be encouraged to modify their fishing methods from gillnets to trapnets from which large salmon could be released. In New Brunswick, Native groups will be offered financial assistance to replace existing salmon gear with trapnets under federal funding from the New Brunswick ERDA. Their fishery will remain a food fishery only. Native Bands will be encouraged to identify alternative development opportunities to replace or reduce the salmon component within their food fishery requirements.

An Atlantic Native Food Fishery Allocation Policy will be drafted for public consultation with all user groups and provincial governments.

I. INTERNATIONAL NEGOTIATIONS

The Department of Fisheries and Oceans will maintain its commitment to cooperate within the North Atlantic Salmon Conservation Organization (NASCO). Specifically, Canada will resist any attempts to increase the catch of North American salmon above the quota of 850t in West Greenland established by NASCO for 1986 and 1987. Canada will maintain the closure date of the Newfoundland Labrador fishery of October 15. This initiative is consistent with Canada's obligations under the North American Commission of NASCO.

MANAGEMENT ZONES
ZONE 15 - RESTIGOUCHE RIVER SYSTEM

Commercial Fishery

Gear	Season
Trap nets	
- New Brunswick	- Closed
- Quebec	- No commercial fishery

1. Licensing

The Gulf Region Licensing Policy will apply.

2. By-catch

Further to imposing the restriction of no salmon by-catch throughout the Atlantic, regulations to eliminate by-catch in non-salmon commercial gear will apply in Zone 1:

a) No person shall set or use any gillnet in those waters of the Chaleur Bay that are closed to gillnetting of any kind between June 8 to December 31 in any year.

b) Groundfish gillnets bait permits will be issued for 1986 in the waters of Bay of Chaleur, on a controlled basis only.

Recreational Fishery (Grilse Only)

Season bag limit - 10 fish

Possession limit - 6 fish

Daily bag limit - 2 fish

Hook and release - 4 fish

Seasons

River	Opening/Closing Dates
Bright Salmon	
Rivers in Zone 1 tributary to the Bay of Chaleurs with the following exceptions:	June 8 - Sept. 30
Benjamin	July 1 - October 15
Caraquet	July 1 - October 15
Charlo	July 1 - October 15

River	Opening/Closing Dates
Eel River	July 1 - October 15
Jacket	July 1 - October 15
Nepisiguit	June 8 - October 7
Pokemouche	July 1 - October 15
Restigouche System	June 1 - August 31
Tetagouche	July 1 - October 15
Tracadie	July 1 - October 15
Middle River (Gloucester County)	July 1 - October 15

Indian Fishery

In Zone 15, the following Indian bands will be authorized to conduct a food fishery under authority of a special licence:

Eel River Bar Indian Band

The terms and conditions of the special licence are subject to negotiation between the Department of Fisheries and Oceans and the Band Chief and Council. Negotiations are underway to redirect the salmon food-fishery from gillnets to trapnets.

ZONE 16 - MIRAMICHI RIVER

Commercial Fishery

Gear	Season
Trap Nets	Closed
Drift Nets	Closed

1. Licensing

The Gulf Region Licensing Policy will apply.

2. By-catch

General measures to eliminate Atlantic salmon by-catch in non-salmon commercial gear will apply. The following measures will also apply in Zone 16:

a) An area closure to groundfish gillnetting will apply to Canadian fisheries waters off the coast of New Brunswick west of a line beginning at Pointe à Barreau, Northumberland County, at 47°26'00"N latitude, 64°53'1"W longitude, thence to a point at 47°04'24"N latitude, 64°21'45"W

longitude, thence to a point on the shoreline of Kent County at 47°00'48"N latitude, 64°49'40" longitude.

b) An area closure to gillnetting of any kind will apply to those waters of the Miramichi Bay lying to the west of a line drawn from the lighthouse on Escuminac Point to a point at Pointe à Barreau at latitude 47°26'00"N. and longitude 64°53'12"W.

c) Groundfish gillnet bait permits will not be issued in 1987 for a bait fishery in the waters of the Miramichi Bay.

Recreational Fishery (Grilse Only)

Season bag limit - 10 fish

Possession limit - 6 fish

Daily bag limit - 2 fish

Hook and release - 4 fish

Seasons

River	Opening/Closing Dates
Black Salmon	
Miramichi	April 15 - May 15
Bright Salmon	
Miramichi System, with the following exceptions:P	June 8 - Sept. 30
Bartholomew	Closed
Bartibog	July 1 - October 29
Buctouche	July 1 - October 15
Cains	July 1 - October 15
Cocagne	July 1 - October 15
Dungarvin (above Underwood Brook)	June 8 - Sept. 15
Little Southwest Miramichi (above Catamaran Brook)	June 8 - Sept. 15
Main Southwest Miramichi (above McKeil Brook)	June 8 - Sept. 15
Northwest Miramichi (above Little river)	June 8 - August 31

Renous	
(above North Renous)	June 8 - Sept. 15
Rocky Brook	June 1 - August 31
Sevogle	
(above Square Forks)	June 8 - Sept. 15
Tabusintac	July 1 - October 26
Eel River	July 1 - October 15
Other tributaries of Main Southwest Miramichi (above Cains River- Except Rocky Brook)	June 8 - Sept. 15

Indian Fishery

In Zone 16, the following Indian bands will be authorized to conduct a food fishery under authority of a special licence:

1) Red Bank Indian Band
2) Big Cove Indian Band
3) Burnt Church Indian Band
4) Eel Ground Indian Band

The terms and conditions of the special licence are subject to negotiations between the Department of Fisheries and Oceans and the Band Chiefs and Councils. Negotiations are underway to redirect the food-fishery from gillnets to trapnets.

ZONE 17 - PRINCE EDWARD ISLAND

Commercial Fishery

Fishery	Season
St. Peters' Bay	Closed
Morrell river Stocks (Northeast shore)	Closed

1. Licencing

The Gulf Region Licensing Policy will apply.

Recreational Fishery (Grilse only)

Season bag limit - 5 fish

Possession limit - 1 fish

Daily bag limit - 1 fish

Hook and release - 2 fish

Season

River	Opening/Closing Dates
All PEI Rivers	July 1 - Sept. 30
All PEI Rivers (Hook and Release only)	Oct. 1 - Oct. 15

ZONE 18 - NORTHUMBERLAND

Commercial Fishery

Waters	Season
All waters within Zone 18, Gulf shore of Nova Scotia	Closed

1. Licensing

The Gulf Region Licensing Policy will apply.

Recreational Fishery (Grilse only)

Season bag limit - 10 fish

Possession limit - 6 fish

Daily bag limit - 2 fish

Hook and release - 4 fish

Season

River	Opening/Closing Dates
All waters of Salmon Management Zone 18 with the exception of the following:	Sept. 1 - Oct. 31
Margaree River (downstream from the Big Interval Bridge)	June 1 - Oct. 15
Margaree River (upstrean from the Big Interval Bridge)	Closed all year

ZONE 19 - CAPE BRETON EAST

Commercial Fishery

Waters	Season
All coastal waters	Closed

1. Licensing

The Scotia-Fundy Region Licensing Policy will apply.

Recreational Fishery (Grilse only)

Season bag limit - 10 fish

Possession limit - 6 fish

Daily bag limit - 2 fish

Hook and release - 4 fish

Season

Rivers	Opening/Closing Dates
All the waters of any rivers and tributaries which flow into the Atlantic Ocean bounded by Cape Breton and Richmond Counties and that portion of Victoria County south of cape North, with the exception of the following:	June 30- Oct. 15
North River	June 1 - Sept. 30

Indian Food Fishery

Wagmatcook Reserve

Food fishery to be conducted as outlined in a licence issued pursuant to Section 6(1) of the Nova Scotia Fishery Regulations under the Fisheries Act. The allocation will not exceed 100 fish.

ZONE 20 - EASTERN SHORE

Commercial Fishery

Waters	Season
All coastal waters of Guysborough County and that portion of Halifax County east of the City of Halifax.	Closed

1. Licensing

The Scotia-Fundy Region Licensing Policy will apply.

Recreational Fishery (Grilse only)

Season bag limit - 10 fish

Possession Limit - 6 fish

Daily bag limit - 2 fish

Hook and release - 4 fish

Season

River	Opening/Closing Dates
All waters of Salmon Management Zone 20 with the exception of the following:	June 1 - August 29
All rivers and tributaries thereof that flow into that portion of Chedabucto Bay bounded by Guysborough County	June 24 - Sept. 22
Country Harbour River	June 24 - Sept. 22
St. Mary's River, downstream from a point 100 m upstream from Silver's Bridge and downstream from the highway bridge at Glenelg	May 18 - August 29
East River, St. Mary's upstream from a point 100 m upstream of Silver's Bridge	May 18 - August 14
West River, St. Mary's upstream from the highway bridge at Glenelg	June 1 - August 14

ZONE 21 - SOUTHWEST NOVA SCOTIA

Commercial Fishery

Waters	Season
All coastal waters of Lunenburg, Queens, Shelburne, Yarmouth and Digby Counties and that portion of Halifax County west of the city of Halifax.	Closed

1. Licensing

The Scotia-Fundy Region Licensing Policy will apply.

Recreational Fishery (Grilse only)

Season bag limit - 10 fish

Possession limit - 6 fish

Daily bag limit - 2 fish

Hook and release - 4 fish

Season

Rivers	Opening/Closing Dates
All the waters of the rivers and tributaries which flow into that portion of the Atlantic Ocean bounded by Lunenburg, Queens, Shelburne, Yarmouth and Digby Counties and that portion of Halifax County west of the city of Halifax with the following exceptions:	May 10 - August 15
Gold River	June 1 - August 15
Ingram River	June 1 - August 15
Lahave River, except upstream from Morgan Falls	June 1 - August 15
Lahave River upstream from Morgan Falls	Closed all year
Medway River	May 10 - July 31
Mushamush River	June 1 - August 15
Petite Rivière	June 1 - July 31
Salmon River	June 1 - August 15
Tusket River	June 1 - August 15

ZONE 22 - UPPER BAY OF FUNDY

Commercial Fishery

Waters	Season
All coastal waters of Annapolis, Kings, Hants, Colchester and Cumberland Counties which border on the Bay of Fundy	Closed

1. Licensing

The Scotia-Fundy Region Licensing Policy will apply.

Recreational Fishery (Grilse only)

Season bag limit - 10 fish

Possession limit - 6 fish

Daily bag limit - 2 fish

Hook and release - 4 fish

Season

Rivers	Opening/Closing Dates
All the waters of any rivers and tributaries which flow into that portion of the Bay of Fundy bounded by Annapolis, Kings, Hants, Colchester and Cumberland Counties with the following exceptions:	August 15 - Oct. 31
Annapolis River	May 1 - July 31
Gaspereau River	May 1 - July 31
Stewiacke River	August 1 - Oct. 31

ZONE 23 - SOUTH WESTERN NEW BRUNSWICK

Commercial Fishery

Fishery	Season
Saint John	Closed
Petitcodiac	Closed

1. Licensing

The Scotia-Fundy Region Licensing Policy will apply.

Recreational Fishery (Grilse only)

Season bag limit - 10 fish

Possession limit - 6 fish

Daily bag limit - 2 fish

Hook and release - 4 fish

Seasons

River	Opening/Closing Dates
Black Salmon	April 15 - May 15
Bright Salmon	
Waters tributary to the Bay of Fundy with the following exceptions:	June 15 - Oct. 15
Big Salmon River - upstream of and including Walton Dam Pool	June 15 - Sept. 15
Big Salmon River - downstream from Walton Dam Pool	June 8 - Oct. 22
Hammond River - below French Village Bridge Pool	June 15 - Oct. 31
Hammond River - upstream from French Village Bridge Pool	June 15 - Oct. 15
Kennebecasis River	June 15 - Oct. 31
Nashwaak River - upstream from the Bridge at Stanley	June 15 - Sept. 30
Nashwaak River - downstream from the Bridge at Stanley	June 15 - Oct. 15
St. John River - upstream from the Grafton Bridge at Woodstock	June 15 - Sept. 30
St. John River - downstream from the Grafton Bridge at Woodstock	June 1 - Oct. 15
Peticodiac River System	Aug. 15 - Oct. 15
Point Wolfe River	Closed all year
St. Croix River	June 15 - Sept. 15
Tobique River	June 15 - Sept. 15

Indian Fishery

Kingsclear Reserve

Food fishery to be conducted as outlined in Section 6.2 of the New Brunswick Fishery Regulations under the Fisheries Act.

NEWFOUNDLAND COMMERCIAL SALMON FISHERY

ZONE 1 - Cape Chidley to Cape Rouge

1) Season — June 5 - Oct. 15

2) Licensing

The Newfoundland Region Licensing Policy applies.

ZONE 2 - Cape Rouge to Cape Charles

1) Season — June 5 - Oct. 15

2) Licensing

The Newfoundland Region Licensing Policy applies.

ZONE 3 - Cape Charles to Cape Bauld to cape John, excluding Straits

1) Season — June 5 - Oct. 15

2) Licensing

The Newfoundland Region Licensing Policy applies.

ZONE 4 - Cape John to Cape Freels

1) Season — June 5 - Oct. 15

2) Licensing

The Newfoundland Region Licensing Policy applies.

ZONE 5 - Cape Freels to Cape Bonavista

1) Season — June 5 - Oct. 15

2) Licensing

The Newfoundland Region Licensing Policy applies.

ZONE 6 - Cape Bonavista to Grates Cove

1) Season — June 5 - Oct. 15

2) Licensing

The Newfoundland Region Licensing Policy applies.

ZONE 7 - Grates Cove to Cape St. Francis

1) Season June 5 - Oct. 15

2) Licensing

The Newfoundland Region Licensing Policy applies.

ZONE 8 - Cape St. Francis to Cape Race

1) Season June 5 - Oct. 15

2) Licensing

The Newfoundland Region Licensing Policy applies.

ZONE 9 - Cape Race to Cape St. Mary's

1) Season June 5 - Oct. 15

2) Licensing

The Newfoundland Region Licensing Policy applies.

ZONE 10 - Cape St. Mary's to Point Crewe

1) Season June 5 - Oct. 15

2) Licensing

The Newfoundland Region Licensing Policy applies.

ZONE 11 - Point Crewe to Fox Point

1) Season

Point Crewe to Pass Island June 5 - Oct. 15

Pass Island to Cape Fox June 5 - July 10

2) Licensing

The Newfoundland Region Licensing Policy applies.

ZONE 12 - Fox Point to Cape Ray

1) Season — Closed

2) Licensing

No commercial salmon licenses will be issued.

ZONE 13 - Cape Ray to Cape St. Gregory

1) Season — June 5 - July 10

2) Licensing

The Gulf Region Licensing Policy will apply.

ZONE 14 - Cape St. Gregory to Cape Charles, including Straits

1) Season — June 12 - Oct. 15

2) Licensing

The Gulf Region Licensing Policy will apply.

NEWFOUNDLAND RECREATIONAL SALMON FISHERY

With the exception of Labrador, anglers in the Province of Newfoundland and Labrador will only be permitted to retain grilse. The larger multi-sea winter salmon (63cm and greater in length) must be released immediately with the least possible harm to the fish.

In 1987, DFO officials will be meeting provincial authorities to discuss expansion of the tagging program to the sportfishing sector in Newfoundland in 1988.

Season bag limit - 15 fish

Possession limit - 4 fish (two day limit)

Daily bag limit - 2 fish

Hook and release - 4 fish

Season

River	Opening/Closing Dates
Labrador	
All waters of rivers and tributaries in Labrador with the exception of the following:	June 13 - Sept. 13
Pinware River	June 6 - Sept. 13
Forteau River	June 6 - Sept. 13
Lanse-au-Loup River	June 6 - Sept. 13
Newfoundland	
Three sets of opening/closing dates have been set for most rivers in three respective areas of the island portion of the province:	
(a) Cape Ray, north to and including Bonne Bay	June 6 - Aug. 30
(b) Cape Bauld to Cape Ray (east and south coasts)	June 13 - Sept. 7
(c) North of Bonne Bay to Cape Bauld	June 20 - Aug. 30
The following rivers are exceptions within these areas:	
Northwest Brook, Grand Bay	June 1 - Aug. 30
Bear Cove River	June 1 - Aug. 30

Garnish River (month up to, but not including the Gorge)	June 13 - Aug. 30
Garnish River (from the Gorge to the headwaters)	Closed
Tides Brook and Tributaries	June 7 - July 19
Colinet River	June 20 - July 19
St. Genevieve River	June 1 - Aug. 30
Ten-Mile Lake and tributary streams	June 1 - Aug. 30
Round Lake and tributary streams	June 1 - Aug. 30
Lower Humber River	June 6 - Aug. 30
Upper Humber River (Deer Lake to Big Falls)	June 6 - Sept. 13
Portland Creek River and Tributary stream	June 20 - Sept. 13
Deer Arm River	June 20 - Aug. 30
Southeast River, Placentia	June 20 - Aug. 30
Northeast River, Placentia	June 20 - Aug. 30
Indian River	June 20 - Aug. 30
Exploits River	June 20 - Aug. 30
Terra Nova River	June 20 - Aug. 30
Little Salmonier River	June 20 - Aug. 30
West River, St. Barbe	* - Aug. 30
Fox Island River	June 20 - Aug. 30
Watson's Brook	June 20 - Aug. 30
Little Codroy River	June 27 - Aug. 30
Harry's River	June 27 - Aug. 30
Little Barachois River	June 27 - Aug. 30
Torrent River and Tributaries	* - Aug. 30
Serpentine River and Tributaries	June 6 - Aug. 3
Cook's Brook	July 4 - Aug. 20

* Opening when 1000 salmon have passed upstream through the fishway.

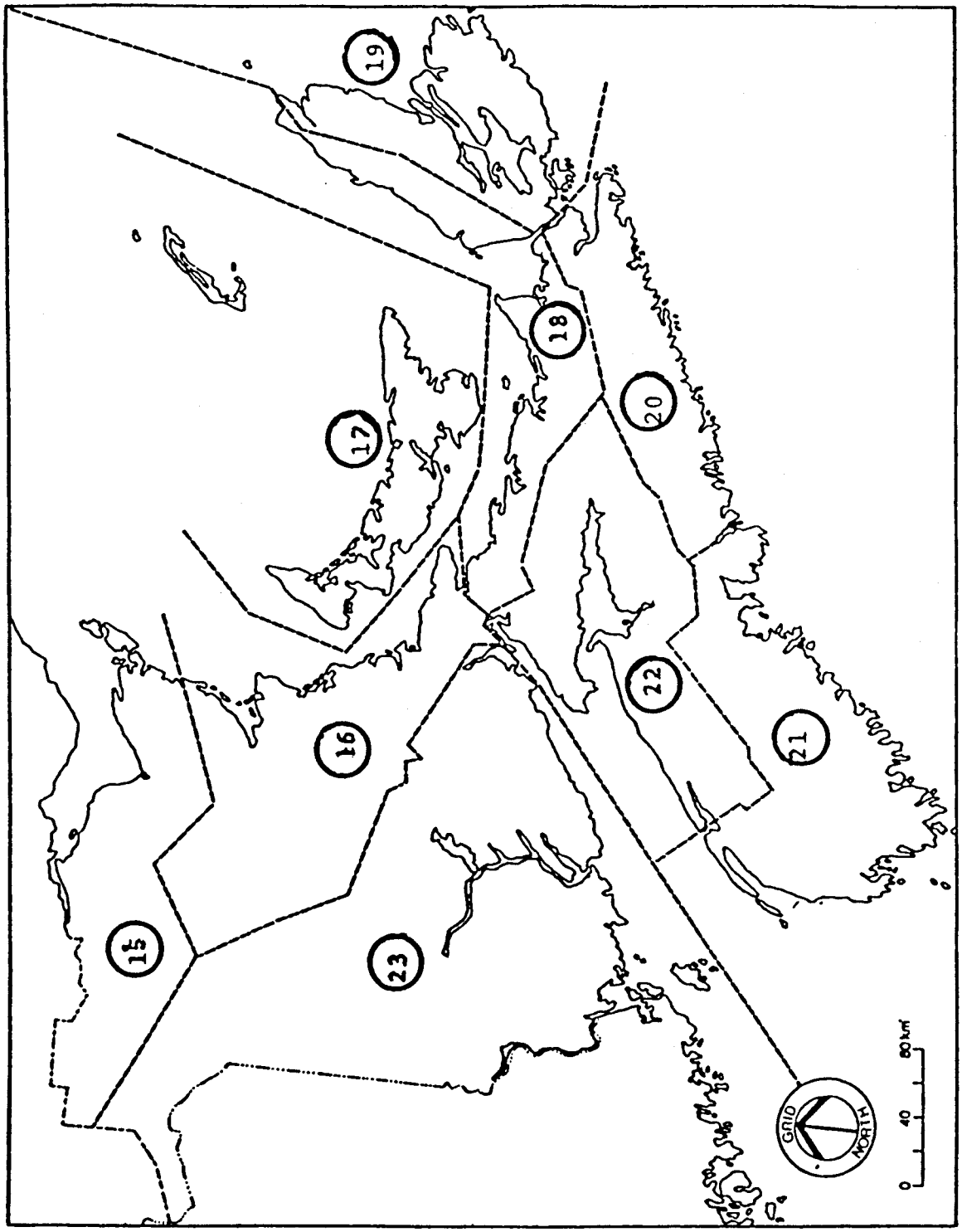
River	Opening/Closing Dates
The following rivers will not be open to anglers in 1985:	
Highlands River	Closed all year
Hughes Brook	Closed all year
Goose Arm River	Closed all year
Parker's River	Closed all year
Western Brook and tributaries	Closed all year

ANNEX 1

MANAGEMENT ZONES

ZONE	PROVINCE	REGION
1 - Cape Chidley to Cape Rouge	Newfoundland	Newfoundland
2 - Cape Rouge to Cape Charles	Newfoundland	Newfoundland
3 - Cape Charles to Cape Bauld to Cape John, excluding Straits.	Newfoundland	Newfoundland
4 - Cape John to Cape Freels	Newfoundland	Newfoundland
5 - Cape Freels to Cape Bonavista	Newfoundland	Newfoundland
6 - Cape Bonavista to Grates Cove	Newfoundland	Newfoundland
7 - Grates Cove to Cape St. Francis	Newfoundland	Newfoundland
8 - Cape St. Francis to Cape Race	Newfoundland	Newfoundland
9 - Cape Race to Cape St. Mary's	Newfoundland	Newfoundland
10 - Cape St. Mary's to Point Crewe	Newfoundland	Newfoundland
11 - Point Crewe to Fox Point	Newfoundland	Newfoundland
12 - Fox Point to Cape Ray	Newfoundland	Gulf
13 - Cape Ray to Cape St. Gregory	Newfoundland	Gulf
14 - Cape St. Gregory to Cape Charles, including Straits.	Newfoundland	Gulf

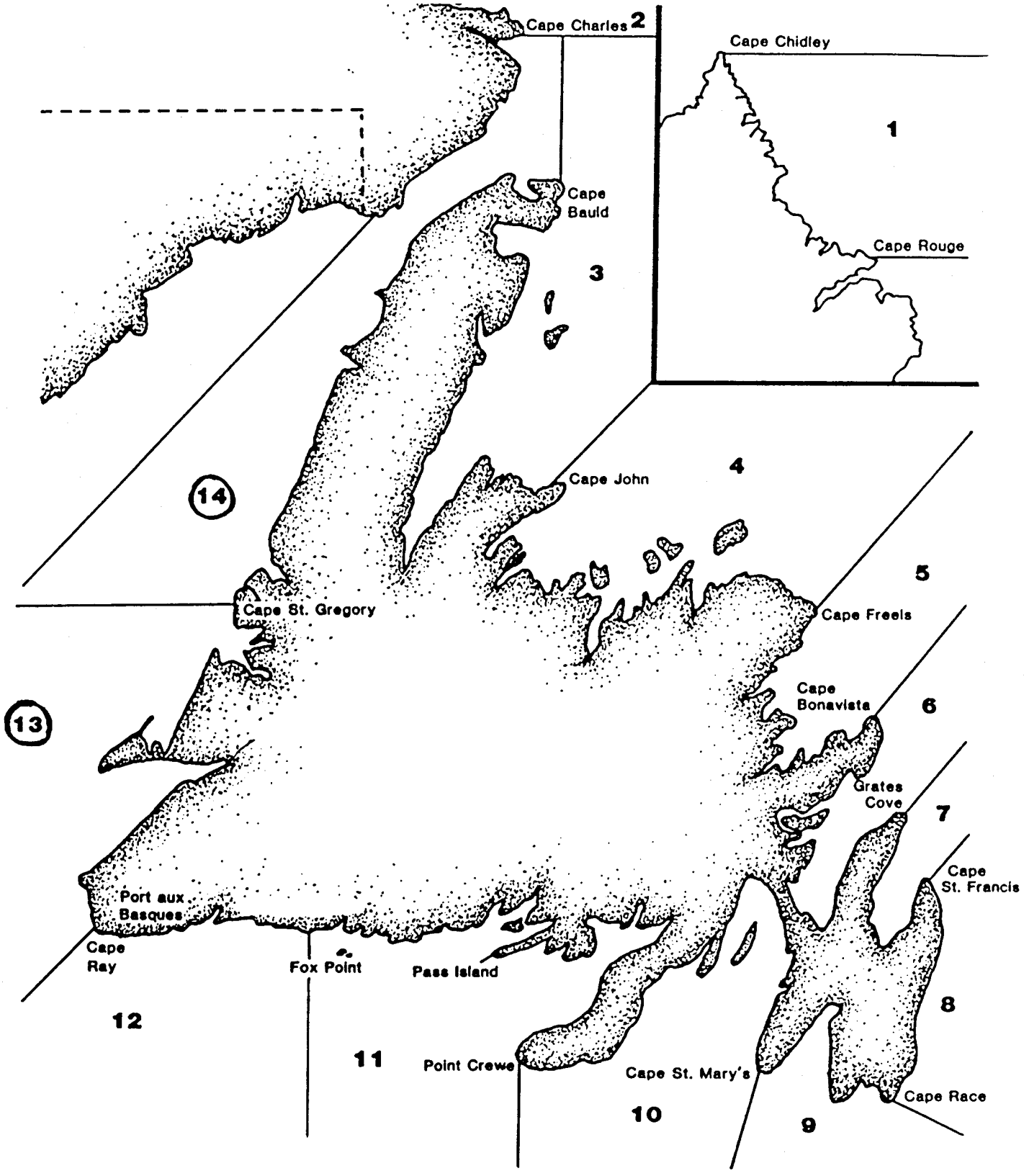
ZONE	PROVINCE	REGION
15 - Restigouche	New Brunswick	Gulf
16 - Miramichi	New Brunswick	Gulf
17 - P.E.I.	P.E.I.	Gulf
18 - Northumberland	Nova Scotia	Gulf
19 - Cape Breton East	Nova Scotia	Scotia Fundy
20 - Eastern Shore	Nova Scotia	Scotia Fundy
21 - Southwest Nova Scotia	Nova Scotia	Scotia Fundy
22 - Upper Bay of Fundy	Nova Scotia	Scotia Fundy
23 - Saint-John	New Brunswick	Scotia Fundy



MANAGEMENT ZONES FOR THE MARITIME PROVINCES
ZONES DE GESTION POUR LES PROVINCES MARITIMES

ZONES DE GESTION POUR TERRE-NEUVE ET LE LABRADOR

MANAGEMENT ZONES FOR NEWFOUNDLAND AND LABRADOR



JUNE 1988
REYKJAVIK

ANNEX 7

NORTH ATLANTIC SALMON CONSERVATION ORGANIZATION

NORTH AMERICAN COMMISSION

PAPER NAC(88)3

1987 STATISTICS ON CANADIAN SALMON

(January 25, 1988)

Table 1

Preliminary 1987 Commercial Atlantic Salmon Catch by Weight and Numbers

Zone	Grilse (kg)	#	Salmon (kg)	#	Total (kg)
(NFLD.)					
1	12,507	6,260	62,086	12,823	74,593
2	128,878	65,024	243,718	49,811	372,596
3	188,452	95,457	178,772	38,151	367,224
4	111,102	55,896	72,913	15,442	184,015
5	39,155	21,528	20,855	5,786	60,010
6	26,520	14,685	20,214	4,389	46,734
7	8,945	4,484	14,889	3,244	23,834
8	8,061	4,239	12,072	2,627	20,133
9	3,993	2,121	1,470	309	5,463
10	17,913	9,434	8,596	1,858	26,509
11	24,541	13,218	25,553	5,609	50,094
12	0	0	0	0	0
13	57,582	25,110	21,169	4,660	78,751
14	66,613	30,964	65,579	14,180	132,192
Nfld. Sub-Total	694,262	348,420	747,886	158,889	1,442,148
(N.B.)					
15	0	0	0	0	0
16	0	0	0	0	0
23	0	0	0	0	0
N.B Sub-Total	0	0	0	0	0
(P.E.I.)					
7	0	0	0	0	0
(N.S.)					
18	0	0	0	0	0
19	0	0	0	0	0
20	0	0	0	0	0
21	0	0	0	0	0
22	0	0	0	0	0
N.S. Sub-Total	0	0	0	0	0
Quebec	4,467	2,978	92,820	20,494	97,287
TOTAL	698,729	351,398	840,706	179,383	1,539,435

(January 25, 1988)

Table 2

Preliminary 1987 Recreational Atlantic Salmon Catch by Weight and Numbers

	Grilse (kg)	#	Salmon (kg)	#	Total (kg)
Nfld. Region	27,508	16,492	1,864	418	29,372
Gulf Region					
a) Nfld.	18,056	13,277	812	223	18,868
b) P.E.I.	865	476	0	0	865
c) N.B.	33,142	20,329	0	0	33,142
d) N.S.	1,811	1,066	0	0	1,811
Scotia-Fundy Region					
a) N.B.	5,897	3,250	0	0	5,897
b) N.S.	14,926	8,362	0	0	14,926
Quebec	10,218	6,812	53,911	9,802	64,129
TOTAL	112,423	70,064	56,587	10,433	169,010

Table 3

Preliminary 1987 Atlantic Salmon Native Food Fishery Catch by Weight and Numbers

	Grilse (kg)	#	Salmon (kg)	#	Total (kg)
Nfld. Region	31	18	0	0	31
Gulf Region					
a) Nfld.	0	0	0	0	0
b) P.E.I.	0	0	0	0	0
c) N.B.	2,652	1,725	7,211	1,399	9,863
d) N.S.	0	0	0	0	0
Scotia-Fundy Region					
a) N.B.	635	280	6,048	1,120	6,683
b) N.S.	0	0	426	94	426
Quebec	427	213	5,173	729	5,600
TOTAL	3,745	2,236	18,858	3,342	22,603

TABLE

(January 25, 1988)

Canadian Atlantic Salmon Catches in Tonnes since 1960 and Numbers since 1982

(Information provided to the International Council for Exploration of the Sea (ICES))

Year	Grilse		Salmon		Total	
	Tonnes	Numbers	Tonnes	Numbers	Tonnes	Numbers
1960	-		-		1,636	
1961	-		-		1,583	
1961	-		-		1,719	
1963	-		-		1,861	
1964	-		-		2,069	
1965	-		-		2,116	
1966	-		-		2,369	
1967	-		-		2,863	
1968	-		-		2,111	
1969	-		-		2,202	
1970	761		1,562		2,323	
1971	510		1,482		1,992	
1972	558		1,201		1,759	
1973	783		1,651		2,434	
1974	950		1,589		2,539	
1975	912		1,573		2,485	
1976	785		1,721		2,506	
1977	662		1,883		2,545	
1978	320		1,225		1,545	
1979	582		705		1,287	
1980	917		1,763		2,680	
1981	818		1,619		2,437	
1982*	716	358,000	1,082	240,000	1,798	598,000
1983*	513	265,000	911	201,000	1,424	466,000
1984*	467	234,000	645	143,000	1,112	377,000
1985	593	333,084	540	122,621	1,133	455,705
1986	780	417,269	779	162,305	1,559	579,574
1987	815	423,698	916	193,168	1,731	616,866

The 1987 total catch of salmon (1,731 tonnes) is:

- 23.2% above the previous 5 year mean (1,405.2)
- 1.2% below the previous 10 year mean (1,752.0)
- 11.2% below the previous 15 year mean (1,949.5)
- 15.0% below the previous 20 year mean (2,036.7)

The 1987 total catch of MSW salmon only (916 tonnes) is:

- 15.7% above the previous 5 year mean (791.4)
- 17.9% below the previous 10 year mean (1,115.2)
- 27.3% below the previous 15 year mean (1,259.1)

The 1987 total catch of grilse only (815 tonnes) is:

- 32.8% above the previous 5 year mean (613.8)
- 28.0% above the previous 10 year mean (636.8)
- 18.0% above the previous 15 year mean (690.4)

NOTE: ALL CATCH FIGURES FOR 1987 ARE PRELIMINARY

* Numbers for 1982-84 are estimated (assuming 2.0kg for average grilse; 4.5kg for average salmon)

(January 25, 1988)

TABLE

Harvest by Zone in the Newfoundland Commercial Salmon Fisheries 1978-82 Average and Yearly since 1983

Zone	1978-82 Average Catch (Tonnes)	1983 Catch (Tonnes)	1984 Catch (Tonnes)	1985 Catch (Tonnes)	1986 Catch (Tonnes)	1987* Catch (Tonnes)	1987 Compared to 1978-82 Average %
1	124	81	51	72	89	75	-40
2	485	286	211	139	309	373	-23
3	257	191	134	123	192	367	+43
4	166	125	128	111	200	184	+11
5	70	58	60	72	61	60	-14
6	57	30	35	65	54	47	-18
7	45	23	20	25	19	24	-47
8	40	24	32	31	24	20	-50
9	17	9	12	11	8	5	-71
10	36	22	28	51	49	27	-25
11	54	44	34	101	67	50	-7
12	79	53	0	0	0	0	-100
13	40	33	43	32	79	79	+98
14	36	37	33	30	79	132	+267
Total	1,504	1,016	821	862	1,230	1,442	-4
Insular Nfld. only	895	649	559	651	832	995	+11

* All figures for 1987 are preliminary

(January 25, 1988)

NOMINAL CATCHES (PROVISIONAL) OF ATLANTIC SALMON IN CANADA FOR 1987 (IN KG ROUND FRESH WEIGHT)

	GRILSE	% OF TOTAL	SALMON	% OF TOTAL	TOTAL	% OF TOTAL
QUEBEC						
R	10,218	1.3	53,911	5.9	64,219	3.7
C	4,467	0.5	92,820	10.1	97,287	5.6
Total	14,685	1.8	146,731	16.0	161,506	9.3
NFLD.						
R	45,564	5.6	2,676	0.3	48,240	2.8
C	694,262	85.2	747,886	81.6	1,442,148	83.3
Total	739,826	90.8	750,562	81.9	1,490,388	86.1
MARITIMES						
R	56,641	7.0	0	0	56,641	3.3
C	0	0.0	0	0	0	0.0
Total	56,641	7.0	0	0	56,641	3.3
NATIVE FOOD FISHERY (ALL AREAS)	3,745	0.4	18,858	2.1	22,603	1.3
TOTAL	814,897	100.0	916,151	100.0	1,731,138	100.0

R = Recreational (TOTAL = 169,100 kg or 9.8%)

C = Commercial (TOTAL = 1,539,435 kg or 88.9%)

NOTE: ALL CATCH FIGURES FOR 1987 ARE PRELIMINARY

(January 25, 1988)

TABLE: A COMPARISON OF THE OVERALL 1983, 1984, 1985, 1986 AND 1987 ATLANTIC SALMON FISHERIES* (IN TONNES)

AREA	GRILSE					SALMON					TOTAL				
	1983	1984	1985	1986	1987	1983	1984	1985	1986	1987	1983	1984	1985	1986	1987
QUEBEC															
R	4.2	4.0	7.1	9.3	10.2	46.6	37.8	47.7	61.5	53.9	50.8	41.8	54.8	70.8	64.1
C	6.4	1.5	4.2	7.4	4.5	88.1	60.6	65.5	68.5	92.8	94.5	62.1	69.8	75.9	97.3
TOTAL	10.6	5.5	11.3	16.7	14.7	134.7	98.4	113.2	130.0	146.7	145.3	103.9	124.6	146.7	161.4
NFLD.															
R	55.8	63.0	61.7	62.9	45.6	8.0	3.4	1.2	1.9	2.7	63.8	66.4	62.9	64.8	48.2
C	401.5	346.3	464.0	608.3	694.3	615.0	475.1	398.8	621.8	747.9	1016.5	821.4	862.9	1230.1	1442.1
TOTAL	457.3	409.3	525.7	671.2	739.9	623.0	478.5	400.1	623.7	750.6	1080.3	887.8	925.8	1294.9	1490.4
MARITIMES															
R	29.5	34.8	52.9	86.4	56.6	37.5	2.0	0	0	0	67.0	36.8	52.9	86.4	53.3
C	15.6	14.9	0	0	0	115.8	41.0	0	0	0	131.4	55.9	0	0	0
TOTAL	45.1	49.7	52.9	86.4	56.6	153.3	43.0	0	0	0	198.4	92.7	52.9	86.4	56.6
NATIVE	?	2.1	2.5	5.7	3.7	?	25.0	26.3	25.3	18.9	?	27.1	28.9	31.0	22.6
TOTAL	513.0	466.6	592.6	780.0	814.9	911.0	644.9	539.7	779.0	916.2	1424.0	1111.5	1132.3	1559.0	1731.1

* Numbers may not add directly due to rounding process

R = Recreational
C = Commercial

NOTE: ALL CATCH FIGURES FOR 1987 ARE PRELIMINARY

JUNE 1988
REYKJAVIK

ANNEX 8

NORTH ATLANTIC SALMON CONSERVATION ORGANIZATION

NORTH AMERICAN COMMISSION

PAPER NAC(88)4

CAFSAC ADVICE FOR 1988

The Status of Atlantic Salmon Stocks in Atlantic Canada and Advice for their Management in 1988

At its meeting of 27 November, 1987, CAFSAC considered available data and analyses concerning the general status of Atlantic salmon stocks throughout Atlantic Canada and, in particular, the status of Atlantic salmon stocks in the Miramichi, Restigouche, Saint John, Margaree, LaHave and Conne rivers.

1.0 STATUS OF SPECIFIC STOCKS

1.1 Miramichi River

As in the previous two years, there was no drift net or trap net fishery; anglers were required to release all multi-sea-winter (MSW) salmon (determined as fish 63cms or longer) but, as in previous years, native fisheries were not restricted by quota. Extraordinary measures were introduced, however, because of extremely low water conditions and five major tributaries were closed to angling July 15-27.

Total annual catches in the period 1951-1970 were about 77,000 fish but with much increased catches in 1964-67, the highest catch being about 162,000 fish in 1967. Catches in the period 1971-83 were about 37,000 annually. Catches in 1985, 1986 and 1987 are given below (numbers of fish):

	1985		1986		1987	
Fishery	MSW	1SW	MSW	1SW	MSW	1SW
Native	327	546	641	1,988	898	1,274
Angling*	289a	18,439	428a	26,163	127a	16,590
Total	616	18,985	1,069	28,151	1,025	17,864

* - Estimates
a - Assuming catch-and-release mortality rate of 0.03
MSW = Multi-sea-winter salmon
1SW = 1-sea-winter i.e. grilse

Two methods have been used to estimate the spawning escapement, both based on catches at the Millbank trap. The first method relates the catches in the trap to the number of salmon that spawn in the same year as judged subsequently by the number of young salmon (parr) that result from the spawning. The second method relates the catches in the trap to the total number of adults that pass the trap on the basis of the "efficiency" of the trap. This efficiency is estimated from the proportion of recaptures up river of salmon that were released from the Millbank trap after being tagged. There has been concern that the efficiency of the trap may have changed since 1981 as a result of dredging operations, and although the results of tagging experiments carried out in 1985, 1986 and 1987 are quite consistent with each other, they are much lower than the efficiency as measured in 1973. In estimating spawning escapement, CAFSAC has therefore used the 1973 measurement of efficiency for the period prior to 1981, the year specific results for 1985-87, and an historical relationship between Millbank catches and angler catches, to estimate efficiency for 1981-1984.

Based on estimates of the number of 1SW and MSW fish surviving to spawn in 1987, the number of eggs deposited was 78% of the target (132 million eggs), or 18% above the target, depending on whether the escapement was based on the relationship of Millbank catches to subsequent parr densities or on the estimate of trap efficiency. The latter figure would be an over estimate if mortality due to poaching or disease were higher than assumed, or if catches were under reported.

These calculations imply that total returns (Figure 1) to the Miramichi were very much less (13,500 fish) for MSW salmon than had been forecast (54,200) last year on the basis of the number and sex ratio of 1SW returns in 1986. It is noted that the returns of MSW salmon to most rivers in 1987 were much below predicted values, which suggest that some unusual event affected returns on a wide geographical scale, particularly since the success of the West Greenland fishery in 1986 indicated that 1987 should be a year of good returns of MSW salmon to Canadian rivers. It is noted also that in the previous four years, MSW returns have been estimated to be 56-133% of predicted values in comparison to the 1987 performance of 25%. The returns (97,100 fish) of 1SW salmon, on the other hand appear to have been very much better than average (48,500 fish).

Forecasting the return of MSW salmon in 1988 using the same relationship that was used to forecast the 1987 returns, would indicate a return of 36,400 MSW salmon or some 12,800 salmon in excess of spawning requirements.

The returns of 1SW fish cannot be forecast, but the average return for the years 1983 to 1987 is 61,900 fish, which is 39,300 more than are estimated as necessary to meet spawning requirements.

In addition to the general difficulties in assessing salmon stocks, as noted in the final paragraph of this Advisory Document, CAFSAC notes that estimates of returns to the Miramichi are based on the efficiency of the Millbank trap as deduced by the proportion of fish recaptured further up the river. This proportion is, however, based on relatively few recoveries (20 in 1987) and consequently the estimates of trap efficiency are subject to some uncertainty, although the estimates for 1985 to 1987 are similar.

1.2 Restigouche River

Restrictions on the harvest of Atlantic salmon from the Restigouche River in 1987 were similar to those in 1985 and 1986: no commercial fishery on either the New Brunswick or Quebec side of Chaleur Bay; anglers in New Brunswick were allowed to land only 1SW salmon (fish less than 63cm in length), with bag limits of two such fish per day and 10 per season; anglers on Restigouche tributaries in Quebec could land both 1SW and MSW salmon with limits of 1 salmon per day and 7 salmon per season but in New Brunswick/Quebec boundary waters were required to release all MSW fish; and native fishermen at Restigouche, Quebec, were restricted by quota (6,995kg). Native fishermen at Eel River Bar, N.B. were however not restricted by quota.

Catches in the period 1951-70 varied from about 18,000 to 46,000 fish with an average of about 32,000 fish. In the period 1971-83, the average catch was about 10,000 fish. Estimates of catches in 1985, 1986 and 1987 are given below (numbers of fish):

	1985		1986		1987	
Fishery	MSW	1SW	MSW	1SW	MSW	1SW
Native						
Restigouche	976	35	1,145	4	986	5
Eel River Bar	241	0	431	26	501	451
Angling						
New Brunswick	--	3,258	--	4,915	--	4,477
Quebec	752	259	1,418	498	873	591
TOTAL	1,969	3,552	2,994	5,443	2,360	5,524

Homewater returns in 1987 were estimated from two methods. The first method, based on an angling exploitation rate of 20%, was considered optimistic. According to this method, the number of eggs deposited would have been about twice the target (71.4 million eggs). The second method which related angling catches to spawning escapement as judged from subsequent parr densities, indicated that the number of eggs would have been only 60% of the target. Total estimated returns 1970-86 are shown in Figure 1, on the basis of the second method, which may be more reliable. The figure indicates that returns of MSW salmon (11,300 fish) in 1987 were only half the number (21,900) predicted, while the returns of 1SW salmon (10,500) were similar to 1986 and in both years were 25% higher than the 1981-85 average.

The forecast of returns of MSW salmon in 1987 was based on a relationship between the sport catch of 1SW salmon at Kedgwick Lodge, and total returns of MSW salmon to the Restigouche River in the following year. This relationship no longer appears to be valid for forecasting the return of MSW salmon, and CAFSAC has no basis for forecasting the returns in 1988. It is noted that the average return of MSW and 1SW salmon in 1983-1987, has been 12,900 and 8,500 fish respectively. Such returns approximate the estimated spawning requirement for MSW salmon but are nearly 6,000 fish above the requirement for 1SW fish.

1.3 Saint John River

The management plan was similar to that in 1986; there were no closed periods within the June 1 and October 15 open season for the Kingsclear food fishery (the quota remained at 900 fish), a licence was again granted to the Oromocto Band for the capture of 150 salmon, and anglers were required to release MSW salmon (judged as those 63cms or longer). Most tributaries were, however, closed to angling during parts of July and August because of unusually low water levels.

Catches in the period 1970-83 have varied widely (3,100-15,600) with an average catch of about 10,000 fish. Catches in 1985 and 1986, and preliminary estimates for 1987 are given below (numbers of fish):

	1985		1986		1987	
Fishery	MSW	1SW	MSW	1SW	MSW	1SW
By-catch*	2,294	531	563	329	408	340
Native*	2,517	483	2,400	600	1,120	280
Sport**	367	3,402	248	3,742	122	2,815
TOTAL	5,178	4,416	3,211	4,671	1,650	3,435

* Estimate
** Estimate includes allowance for catch and release mortality and poaching

There is less uncertainty about the estimates of salmon returns to the Saint John River than for other rivers because the number of fish passed over the Mactaquac Dam is known. To this must be added not only known or estimated catches and an allowance for poaching, disease and other deaths, but also an estimate of the number of salmon that utilize the river system below the dam. The only means of estimating this component is to use the ratio of historical returns below Mactaquac (as estimated from the recreational catch and the assumed exploitation rate) to the returns above Mactaquac, on the assumption that the ratio of production above and below the dam does not vary between years. Better measures of the relative production below the dam would require an in-season tagging programme below Mactaquac.

The estimates of total returns in 1987 are 8,000 MSW salmon and 16,700 1SW salmon, which are respectively 55% below and 27% above the forecasts. The returns of MSW salmon in 1985 and 1986 were in contrast, 83% and 95% of the values forecast. Estimates of returns for the period 1975-87 are shown in Figure 1. The reasons for the much lower return of MSW salmon are not known, but as noted for the Miramichi, this was a general trend for many rivers in 1987. The pattern of recaptures of fish tagged before release from the Mactaquac hatchery does not suggest unusually high harvest in distant waters. The relatively small numbers of MSW salmon in 1987 does mean that spawning escapement was well below target levels both above (63% of requirement) and below (52%) Mactaquac.

Returns of wild (as compared to hatchery production) large (MSW) salmon originating above Mactaquac Dam are forecast from an historical (1970-1986) relationship between wild 1SW salmon returns and wild MSW salmon returns in the following year. Returns of wild 1SW salmon originating above Mactaquac, are forecast from an historical (1968-81) relationship between egg densities in the Tobique River and the subsequent production of 1SW salmon. Returns of wild 1SW salmon and MSW salmon produced below Mactaquac are forecast using the forecasts for returns to the river system above Mactaquac and the historical (1970-86) relationship between returns above Mactaquac Dam and returns below. Forecasts of the return of hatchery-reared 1SW and MSW salmon are based on return rates from previous releases of smolts, parr and fingerlings.

The forecast total returns are 15,200 MSW and 14,900 1SW salmon. These would represent 3,000 MSW and 5,000 1SW salmon surplus to minimum spawning requirements above Mactaquac and 1,500 MSW and 2,300 1SW salmon below.

1.4 Margaree River

Anglers have been required to release MSW salmon during the early part of the run (before September 1) since 1979, but since 1985, all MSW salmon (judged as fish 63cm or longer) were to be released regardless of date caught. There has been no commercial fishery since 1985. Margaree River salmon stocks are composed of two

runs: the summer run enters the river up to the end of August; and the fall run, during September and October.

Historical catches in the recreational fishery have been variable but averaged around 300 fish, about two-thirds of which were MSW salmon. The 1985, 1986 and 1987 recreational catches (all MSW salmon released), as estimated by DFO Fisheries Officers, are compared below:

	1985	1986	1987
1SW salmon	223	295	353
MSW salmon	(312)	(754)	(408)

These estimates are considered to be less than actual catches whereas an alternative source of information, provincial licence stubs, appears to over estimate the catch. A creel census and a voluntary log book program carried out in 1987, supported this view and suggest initial adjustment of the DFO estimates of the catch of 1SW and MSW salmon by factors of 1.2 and 2.0. The difference between these adjusted values and licence stub values have yet to be resolved. Escapement has been calculted on the basis of the assumptions that the recreational fishery catches either 20.6% or 37.9% of the available population. Under either assumption of exploitation rate, spawning requirements were met (estimates of egg deposition for 1947-86, under either assumption, are shown in Figure 2). The egg deposition values shown for 1985 to 1987 make use of the adjusted DFO catch estimates but even if the adjustments are not made, spawning requirement would still have been met.

The indicator that has been used to forecast MSW returns is a weak relationship between the sport catch in one year and the sport catch from the progeny of that run when returning as MSW salmon. Since, however, MSW salmon must now be released, it is likely that the angling "catch" is not the same measure as in the past. Consequently CAFSAC has no basis for a forecast of returns in 1988, and notes that the average catch of MSW salmon in 1984-1987 has been 399 fish, while allowing spawning requirements to be met. It is hoped that once uncertainties about the catch statistics have been resolved, a new index may be available for forecasting returns.

1.5 LaHave River

More information and analyses are available this year for salmon in this river and specific commentary is thus provided for the first time.

The river has been subject to a salmon development program above Morgan Falls since 1969, and in 1987 (as in 1986) commercial fishing was prohibited, anglers were required to release any fish 63cm or longer (approximately the division between 1SW and MSW salmon), and no angling was permitted in the upper reaches. In addition because of the unusually low water conditions, the angling season was closed early (29 July).

Annual salmon catches since 1970 have varied between 538 (1983) and 2,967 (1980), with MSW salmon varying 247-739 except for 1980 when 1,489 MSW salmon were caught due to an unusually high reported commercial by-catch. The angling catch in 1987 is not available, but based on the relationship between angling catches and the counts of salmon passing the Morgan Falls fishway in each year, it is estimated that the catch was 1,575 1SW and 399 MSW salmon. Recent catches have been (numbers of fish):

	1985		1986		1987	
	MSW	1SW	MSW	1SW	MSW	1SW
Catch	517	741	(382)a	1,092a	(399)a	1,575a

a - estimate of releases

Wild returns to the LaHave are estimated by two methods, one being based on the angler exploitation rate, as determined by tag returns from hatchery reared smolts and the other being based on extrapolating the counts of returning fish at Morgan Falls to the rest of the river system on the basis of relative rearing areas. The first method indicates 1,620 MSW and 8,610 1SW salmon returned in 1987, the other 2,250 MSW and 10,690 1SW salmon. Returns as estimated by method 1, for the period 1973-1987 are shown in Figure 1. Allowing for the angling catch of 1SW salmon and a loss of 300 fish to various causes, the spawning escapement is estimated to have been 3 to 4 times the minimum target requirement.

A forecast of the 1988 return of MSW salmon has been made on the basis of comparison of wild MSW returns in each year and the wild 1SW returns of one year earlier (excluding hatchery production). This relationship suggests 3,040 wild MSW salmon will return, an estimate that is more than twice what the relationship would have predicted for 1987 returns (1,067 fish predicted; 1,174 fish observed). The return of wild 1SW salmon to Morgan Falls in 1988, as suggested by the estimated number of eggs deposited in 1984 and similar comparisons for previous years, would be 1,730 fish (the estimate would have been 1,760 for 1987 and the observed return was 2,529). These forecasts refer to wild fish and an additional 160 MSW and 1,210 1SW salmon may be expected from hatchery releases. Thus total MSW returns to the LaHave may be higher in 1988 than in 1987, while total 1SW returns will be about the same.

1.6 Conne River

The native food fishery which was first authorised in 1986, was assigned the same quota (1,200 salmon less than 63cm in length i.e. predominantly 1SW fish) but the gear permitted was changed from a trap net to gill nets. Anglers were prohibited from retaining salmon over 63cm in length. The angling season was closed early on 15 July (rather than 7 September) because of low water conditions. In addition to catches in the river and estuary, part of the commercial salmon catch in Statistical Section 36, is of Conne River origin.

Recent catches have been: (numbers of fish except for commercial catch which is in tons)

	1985		1986		1987	
	63cm or longer	Less than 63cm	63cm or longer	Less than 63cm	63cm or longer	Less than 63cm
Angling	--	2,729	--	2,060	--	1,598
Native	--	--	3a	519	--	18
Commercial catch in Stat Section 36	23.9	14.8	11.4	17.6	(not available)	

a - Dead in trap

The low catch in the native food fishery was due to loss of the trap net in a fire, and the delay in obtaining gill nets.

The total return to the Conne River estuary was estimated on the basis of subsequent recaptures of salmon tagged near the river mouth. The results indicate a return in 1987 of 512 larger salmon (63cm or longer) and 9,936 fish less than this length. Making allowance for angling catches and other losses (natural and poaching) it is estimated that spawning requirements were exceeded by 80%, although it is noted that the recreational fishery was cut short and the native food fishery took few fish. The spawning requirement for this river cannot be estimated on the basis of eggs per unit area of total rearing habitat because the young salmon also utilize lakes, the capacity of which to support young salmon has not yet been determined. Instead, an attempt has been made to estimate the number of eggs that would be needed to maintain the total returns as calculated, and also the catch of Conne River salmon in the commercial fisheries in Statistical Section 36. The contribution of Conne River salmon to this commercial catch has been assumed to be either 25 or 50%, but for the purpose of calculating spawning requirements, a value mid-way between these two assumptions has been used. The resultant estimate of the spawning requirement is 7.8 million eggs, or about 4,000 salmon smaller than 63cm. This is higher than the 3,000 salmon estimated last year, due to a reduction in the number of eggs it is thought can be deposited by a single fish.

A forecast for 1988 of the return of small salmon has been based on an estimate of the total run of smolts going to sea. This estimate of smolt production was based on the results of tagging smolts upstream and determining the proportion of tagged smolts in the run through a trap downstream. This suggests a total return of 12,600-14,000 salmon, before the commercial fisheries and thus a return of about 7,900-8,800 salmon to the Conne River, a surplus of 3,900-4,800, relative to spawning requirements.

2.0 GENERAL STATUS OF ATLANTIC SALMON STOCKS IN 1987

The overall catches of salmon in Atlantic Canada are presented in Figure 4 (recreational landings) and in Figure 5 (commercial landings in Newfoundland and Labrador). In addition, recent counts of returning salmon at fishways are presented in Figure 6.

2.1 Newfoundland Region

No changes were made to the 1986 version of the Atlantic Salmon Management Plan, that was first implemented in 1984. The commercial fishing seasons remained the same, and in most Salmon Fishing Areas (SFA), the opening was 5 June and the closure was 15 October. In the recreational fishery, mandatory release of MSW fish (determined as fish 63cm or longer) continued in insular Newfoundland (retention allowed in Labrador) and the season bag limit on fish less than 63cm remained at 15.

CAFSAC could not examine the status of stocks in 1987 because commercial and complete recreational data were not available. Furthermore, even if recreational catch statistics were available, they may not be indicative of overall abundance in 1987 owing to low water levels and river closures. Counts of fish from rivers with fishways and counting fences, (Figure 6) for SFAs (Figure 3) of insular Newfoundland as well as angling catches in a few selected rivers, indicate however, a lower abundance of both small and large salmon in 1987 compared to 1986 and the 1982-86 mean value. For Labrador, drought conditions were not a factor in 1987, and no rivers were closed to angling. In general, 1987 catches of salmon less than 63cm for Labrador rivers were apparently higher than the values for 1986 and the 1981-85 mean.

2.2 Gulf Region

2.2.1 Newfoundland and Labrador

Commercial regulations in 1987 were similar to those in effect for 1986. SFA 12 (Figure 3) remained closed, SFA 13 was open from June 5 - July 10, and SFA 14 was open from June 5 - October 15. No new licenses were issued in 1987. In 1986, there were 403 licenses in the Gulf Region which included 61 in southern Labrador. Recreational fishery regulations were also similar to 1986, with local seasons subject to variation orders. Anglers were required to release salmon larger than 63cm in insular Newfoundland, but not in southern Labrador. The seasonal bag limit of 15 fish, the daily limit of two retained, and the daily limit of 4 hooked and released as introduced in 1986, remained in effect for 1987.

Commercial landings in 1987 of small salmon (56,100 fish) were the highest since 1976, and of large salmon (18,900 fish) were the highest since 1983. Recreational catches of 1SW salmon (13,300 fish) were close to recent averages.

Based on the observations at counting facilities (Figure 6), 1SW returns in 1987 to Lomond River Fishway (SFA 14) were equal to 1986, but the 11 MSW fish counted were only 30% of the count in 1986. One-sea-winter salmon returns to Torrent River (SFA 14) fishway were 89% of those of 1986; MSW fish were 76%. Returns to Western Arm Brook fence were the highest since 1983, although counts in 1985 and 1986 may have been biased by low water affecting the passage of fish through the fence. Total 1987 returns to Western Arm Brook, including angled fish, were 447 1SW and a single MSW salmon.

Low water levels in 1987 delayed run-timing and may have decreased the recreational catch. The run at Western Arm Brook did not reach its maximum until the last week of September - an appreciable delay from typical June-July peaks. The Lomond River fishway was dry for much of the summer, yet 1SW returns were similar to 1986 and the Torrent River returns do not appear to have been adversely affected by low water levels. In the latter case this is likely to be due to the large lake upstream from the fishway which may provide a sufficient reservoir to alleviate otherwise severe effects of low water.

The only forecasts that can be made are for Section 50 (Labrador) of SFA14, where the numbers of large salmon in the commercial catch can be predicted from the numbers of small salmon caught in the previous year. The 1987 catch of small salmon in this area was 10,975 fish, and the forecast catch in 1988 of large salmon is 12,930, which would be similar to 1987 and above the recent annual average catch. No other forecasts can be made because although estimates of smolt production are available for Western Arm Brook, these do not correlate well with subsequent catches.

2.2.2 New Brunswick and Nova Scotia (see also sections on Restigouche, Margaree and Miramichi rivers)

Angling catches of 1SW salmon in Prince Edward Island were the highest on record since 1974. Increased catches resulted from enhancement activities on the Morell River, as evidenced by returns of 1SW salmon of hatchery origin to the Morell fishway. MSW salmon counts at the fishway were also substantially higher than in 1986 (64 versus 4 salmon).

Along the Gulf shore of Nova Scotia, counting fence observations (Figure 6) indicated MSW salmon returns to the Cheticamp and South rivers were below 1986, while 1SW returns were similar or higher.

2.3 Scotia-Fundy Region

The Atlantic Salmon Management Plan implemented in 1984, and modified in 1985, was continued virtually unchanged through 1986 and 1987. Key elements of the plan have been the closure of the commercial fisheries and mandatory release of sport-caught MSW salmon in SFA 19 (Cape Breton East), SFA 20 (Eastern Shore, N.S), SFA 21 (Southwest N.S), SFA 22 (Upper Bay of Fundy, N.S) and SFA 23 (Southwestern, N.B) (Figure 3).

Attrition and voluntary buy-back have reduced the eligible commercial salmon fishermen from 290 in 1982 to 41 in 1988, i.e. 8, 3, 5, 1, and 24 fishermen in SFAs 19, 20, 21, 22 and 23 respectively. Commercial landings, 1974-1984, had averaged 5,156 1SW and 11,416 MSW fish.

Sport fishery regulations in 1987 remained virtually unchanged from those of 1986; daily and seasonal possession limits were 2 and 10 1SW fish (less than 63cm) respectively. However, a dry summer caused unusually low river levels and resulted in shortened fishing seasons or in-season closures. These generally restricted "successful" fishing to the pre-July and post-August periods.

The sport fishery data for SFAs 19-22 (Nova Scotia) that are available for 1987, are the result of a preliminary analysis of licence stubs voluntarily returned by anglers. The analysis involved about 1,800 stub returns (about 25% of total licence sales) and judged from experience in 1983-1986, should estimate total catch by SFA within ± 15%. Landings in SFA 23 (Southwestern, N.B) 1987 are also preliminary and are based on the sum of estimates by individual DFO Fishery Officers and N.B Department of Natural Resources and Energy biologists.

Estimates of recreational landings (fish retained) during 1974-1986 are shown in Figure 4 for all SFAs in the Scotia-Fundy Region, Nova Scotia.

Monitoring of salmon at trapping facilities in the Scotia-Fundy Region over a significant time frame is restricted to four facilities: Liscomb River (SFA 20), LaHave and Tusket rivers (SFA 21), and the Saint John River (SFA 23). Counts of wild fish are shown in Figure 6. Each river has been the object of varying degrees of development and therefore may not necessarily reflect the dynamics of other wild stocks.

Eastern Cape Breton (SFA 19) with some 29 salmon producing rivers, yielded an estimated 913 1SW fish to the 1987 sport fishery - 14% more than in 1986 but only 4% more than the mean of the previous three years. It is estimated that 1,164 MSW salmon were hooked and released.

Eastern Shore, N.S (SFA 20) with some 32 salmon producing rivers, yielded an estimated 1,477 1SW fish to the sport fishery - down 35% from 1986 and 33% from the 1984-86 mean. The count of 1SW fish at the Liscomb fishway, where the stock is being rebuilt, at 1,614 fish, was the highest in the nine years on record, and was double that of 1986. The hatchery 1SW return rate (2.75%) to Liscomb was also the highest on record. Hence, it is likely that the low sport catch of 1SW fish reflects the low summer water conditions and shortened seasons rather than fish numbers. The count (88 fish) of MSW fish at the Liscomb fishway was down approximately 25% from the 1986 return. Based on the relationship between counts of MSW fish and 1SW fish each previous year at Liscomb, MSW returns in 1988 are forecast to be 235 fish - double the best ever returns (117 in 1986).

In southwestern Nova Scotia (SFA 21) there are fewer than 20 salmon rivers, but these include the LaHave River and support significant sport fisheries. The estimate from licence stubs of the sport catch (4,993 1SW fish) in 1987 is the highest on record - some 60% higher than 1986 and 85% higher than the 1984-1986 mean. The count of 1SW fish at Morgan Falls (LaHave) was 2,529 fish; also 60%

higher than 1986 and some 50% higher than the previous 3-year mean. Return rates (3.39% and 1.32%) for hatchery produced smolts as 1SW fish to both the LaHave and Tusket in 1987 were also the highest on record.

In the upper Bay of Fundy on the Nova Scotian side (SFA 22), there are some 28 salmon rivers. Most are in the "Inner" Bay of Fundy and produce predominantly 1SW stocks of limited marine migration. Initial sport catch data for 1987 indicate that only about 104 1SW fish were retained - one-eighth the number angled in 1986 (which was also a low year) and the lowest in a 14-year history. Virtually all rivers are late-run and contributed to fall angling when water levels rebounded from summer lows. The sport catch in the Stewiacke River of 72 fish in 1988, as estimated from licence stubs, was only one-third of the forecast which itself was low. The forecast technique which is based on July to October precipitation at Upper Stewiacke and which predicted the reduced yields in 1986, suggests that the sport catch in 1988 will, at 535 1SW fish, be similar to the long-term annual average.

Southwestern New Brunswick (SFA 23) contains small "Inner" Fundy rivers with stocks similar in characteristics to those of SFA 22, as well as the larger "Outer" Fundy rivers, i.e., Saint John River and those to the west. Statistics for the "Inner" Fundy 1987 sport catches are incomplete but, as in SFA 22, catches were very low. A preliminary estimate that only 31 1SW fish were caught in the Big Salmon River in 1987 is supported by observation of extremely low 1SW returns. The forecast for the Big Salmon River in 1987 was that the sport catch would be very low (69 1SW fish). The same predictor, based on the September discharge at Point Wolfe and July sea surface temperature at St Andrews, indicates that a more normal sport catch of 398 1SW fish can be anticipated in 1988.

"Outer" Fundy stocks are largely represented by those of the Saint John River which is discussed earlier.

2.4 Gaspe Quebec

Management measures in 1987 were the same as those in 1986, which included the ban in the Gaspe area on commercial fishing instituted in 1984 and the daily retention of only one fish in the recreational fishery. The seasonal limit in the Gaspe sport fishery was 7 salmon in any combination of 1SW and MSW fish. River flows were near normal in 1987, unlike in most other parts of eastern Canada, and sport landings in 1987 (1,879 1SW fish) were similar to 1986 catches but up 87% over mean landings, 1982-1986. The MSW sport catch of 4,046 fish in 1987 was 16% less than in 1986, but 5% more than the 1982-1986 mean. Angler effort increased over the 1982-1986 mean. Counts at fishways (Figure 6) on the Mitis, Matane and Madeleine rivers (Zone Q3, Figure 3) in 1987 exceeded long term means for both 1SW and MSW fish. These may reflect stock development initiatives, and thus not totally reflect "wild" stock performance. Relationships between MSW fish returns, (2SW in the Mitis) and those of 1SW fish in each previous year for the Mitis, Madeleine, and Bonaventure (Zone Q1) rivers, suggest that MSW returns in 1988 will be higher than the recent average returns.

2.5 West Greenland

At West Greenland in 1987, the catch was 930t, which met the quota for the third year although, in 1986 the quota (909t) was somewhat exceeded (960t). The 1985 quota was 852 tons and the catch was 864t. This compares with the low catches of 310t and 297t in 1983 and 1984, respectively when the quotas (1,190t and 870t) were not taken. The 1987 catch rate of about 85t per day for the first 8 days of fishing was close to that in 1986, which was the highest on record. This indicates a higher abundance of salmon and/or a higher availability to the gear than in the years previous to 1986. Analysis has demonstrated that landings of MSW salmon in Canadian waters are positively correlated to catches at West Greenland in the

previous year (Figure 7). This would suggest that the abundance of MSW salmon in Canada in 1988 should be higher than in 1984, 1985 or 1986. However, it should be noted that this relationship did not appear to function well with respect to the return of MSW salmon in 1987.

3. IMPACT OF ENVIRONMENTAL CONDITIONS ON STOCK STATUS IN 1987

In general, water flows in Atlantic Canada's salmon rivers other than in parts of Quebec and in Labrador were abnormally low in 1987 due to reduced rainfall. As well, there were many cases where water temperatures were measured that equalled or exceeded lethal values for Atlantic salmon. Low water flows were noted mainly in the months of June through August, and recreational fisheries were closed in many areas for part of the summer.

CAFSAC notes that the unusual environmental conditions could have affected both the status of the stock as well as our capability to assess the stocks. Concerns were expressed that adult returns (both timing, numbers, and in-river survival) could have been affected as may the juvenile populations in the river. Lack of "normal" recreational fishing seasons also made interpretation of recreational catch statistics (where they were available) difficult. Furthermore, even when rivers were not closed, low flows and high temperatures may have affected angling success.

River discharge data are available for many areas. In New Brunswick, both the Miramichi and Restigouche river discharges in May were about 40% of the long term average, while June, July and August discharges were about 60% of the long term values. In the Tobique River (St. John tributary) June, July and August flows were the lowest for the 32 years on record, while Mactaquac flows in June were about 50% of the 20-year mean, although not the lowest on record. In Nova Scotia, most river discharges in July and August were about 10-15% of the mean. In insular Newfoundland, the lowest summer precipitation in about 40 years was noted. Rivers in Labrador, however, did not seem to exhibit low summer flows, although only qualitative data are available.

High temperature (in the upper 20s° C) would normally be lethal to both juvenile and adult Atlantic salmon. Temperatures up to 29° C were recorded at Morgan Falls on the LaHave River in Nova Scotia, although few mortalities were noted. Field estimates indicated that, in some rivers (e.g. St. Mary's, N.S; Miramichi, N.B), adult mortalities numbered in the hundreds, and, in the Miramichi River, similar mortalities of juveniles were estimated. As this mortality information was primarily qualitative it cannot be used to modify the forecasts. It was noted, however, that in some rivers including the Miramichi, which were sampled at standard sites both during and after the periods of high temperature, densities of both age 0+ and 1+ parr were highest (or equivalent to the highest) in the 16 years on record. Monitoring of densities at these standard sites will be necessary for at least the next two years in order to assess the impact of the poor water conditions on juvenile survival and 1987 spawning success. It has been noted that low summer flows have been related to poor adult recruitment in upper Bay of Fundy rivers, accordingly recruitment in this area in 1989 may be reduced. It is also possible that similar effects occur in other rivers but information is not adequate to verify this.

4. GENERAL COMMENTS

CAFSAC notes that timely estimation of the returns of salmon to Canadian rivers, and consequently also the forecast of future returns, is hampered by poor documentation of removals e.g. delays in the provision of sport and commercial catch statistics, uncertain statistics for native landings and absence of any information on by-catch mortalities. There are furthermore some uncertainties about the criteria used in the estimation process. Recent statistics for MSW salmon released from the sport fishery may not be comparable to pre 1984 statistics which referred to MSW salmon retained. Similarly, mortalities due to poaching and disease may be different from those assumed. The likelihood that estimates of actual returns since the implementation of the 1984 Management Plan may not be on the same basis as for the previous period may be the reason that these recent estimates have not improved the relationships used in the predictive models.

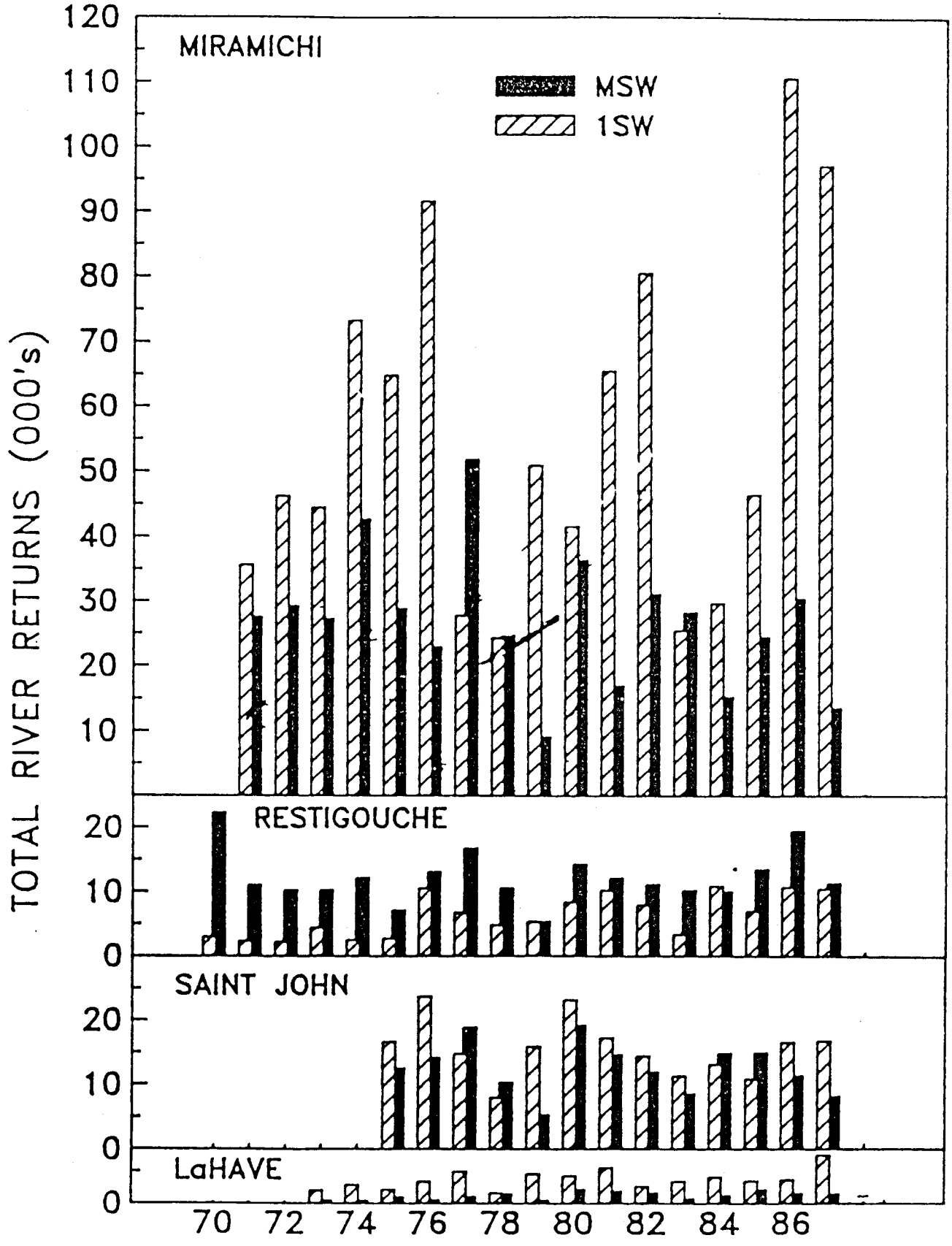


Fig. 1. Estimated total river returns.

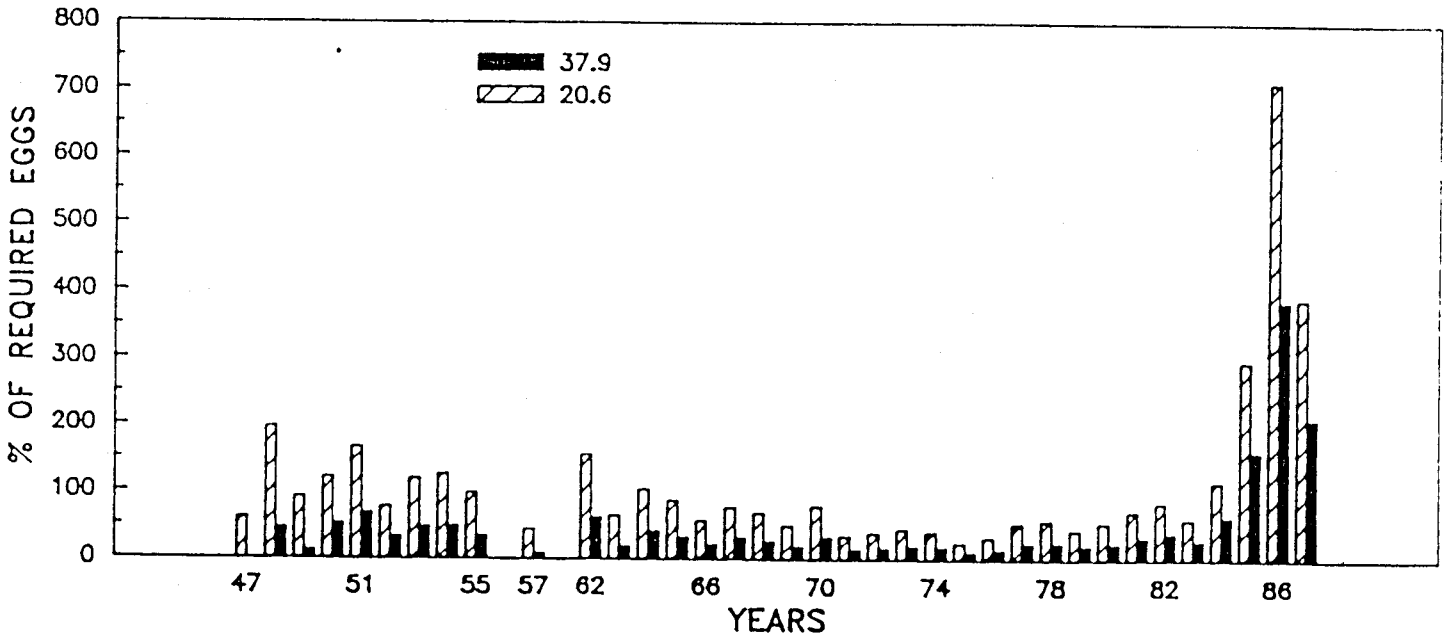


Fig. 2. Margaree, percent of required egg deposition at angler exploitation rates of either 20.6% or 37.9% of returns. (1985–1987 based on adjusted DFO estimates.)

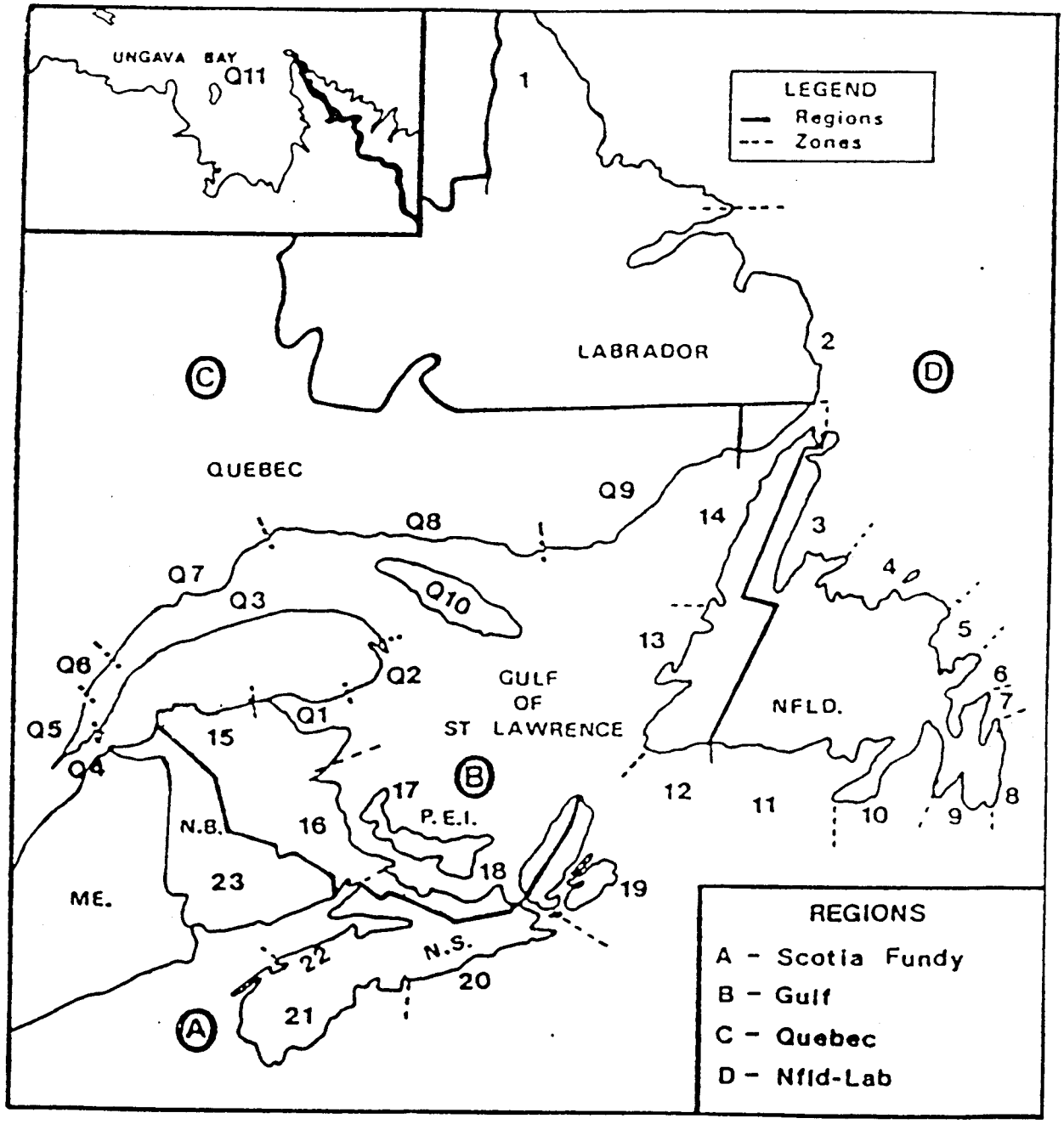


Fig 3. Map of Atlantic provinces showing Salmon Fishing Areas (SFA's) 1-23, Salmon Management Zones of Quebec (Q's) 1-11, provincial and DFO Regional boundaries.

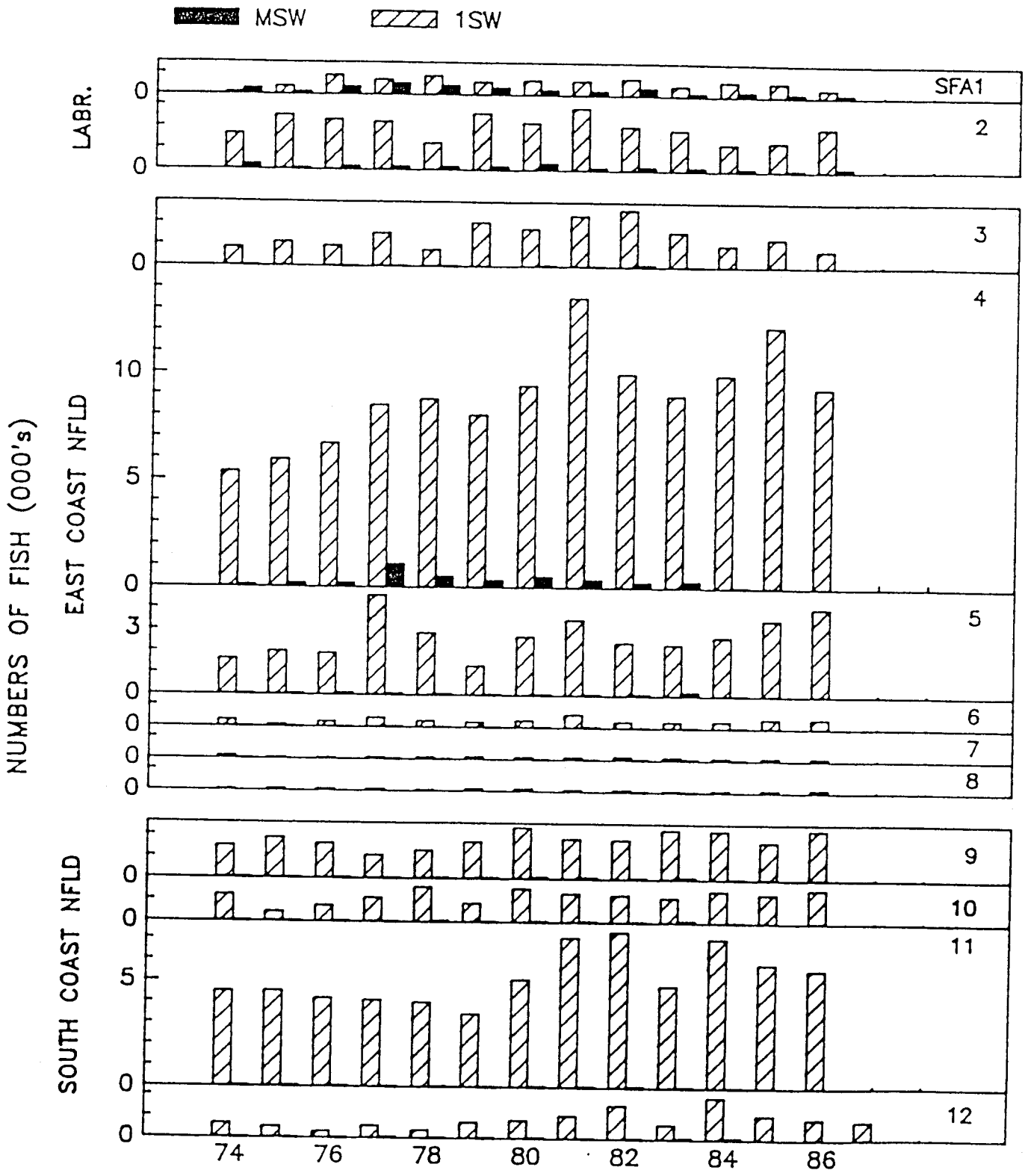


Fig. 4. Recreational landings by Salmon Fish Area (SFA).

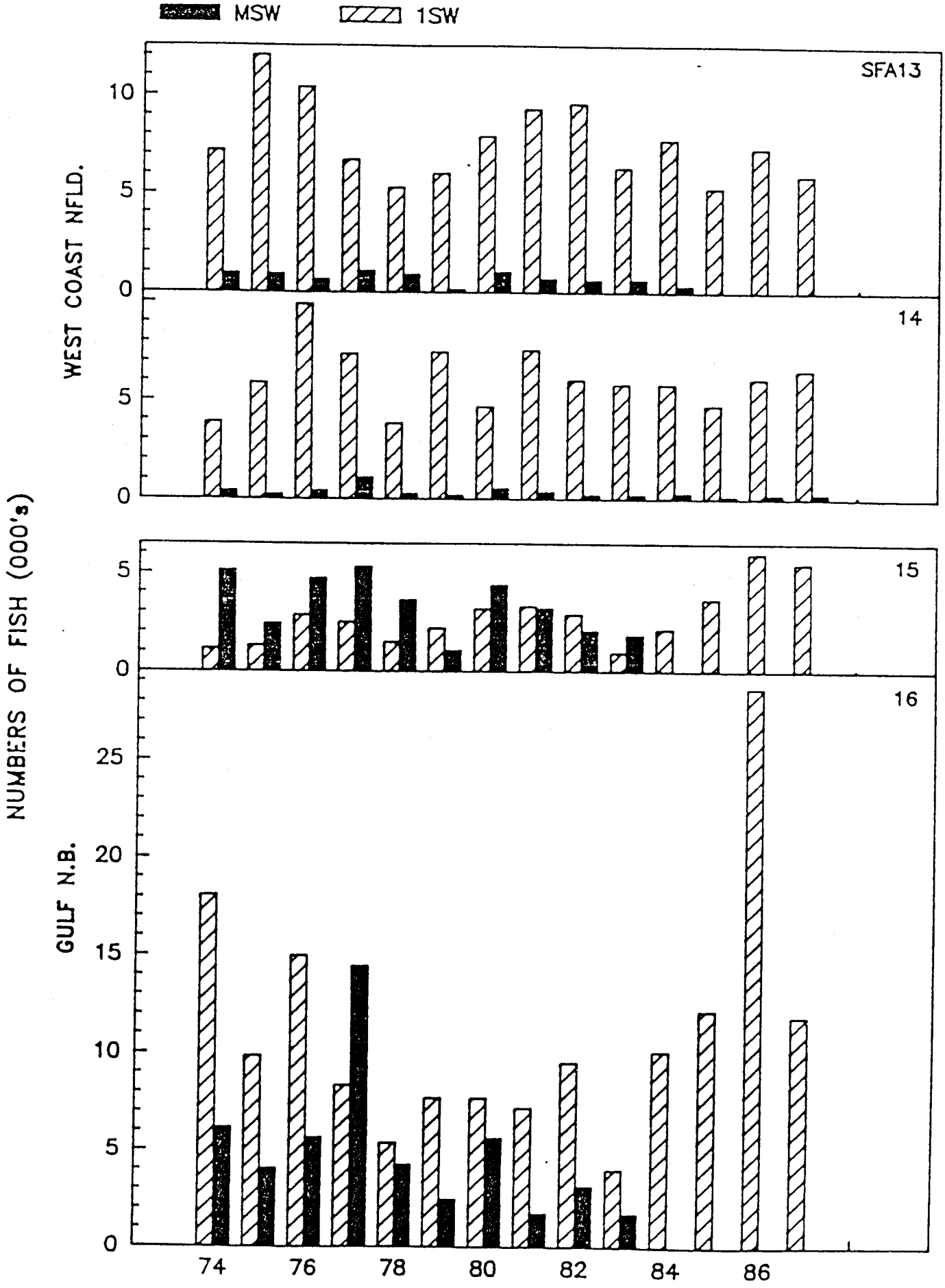


Fig. 4 cont'd. Recreational landings by Salmon Fishing Area (SFA).

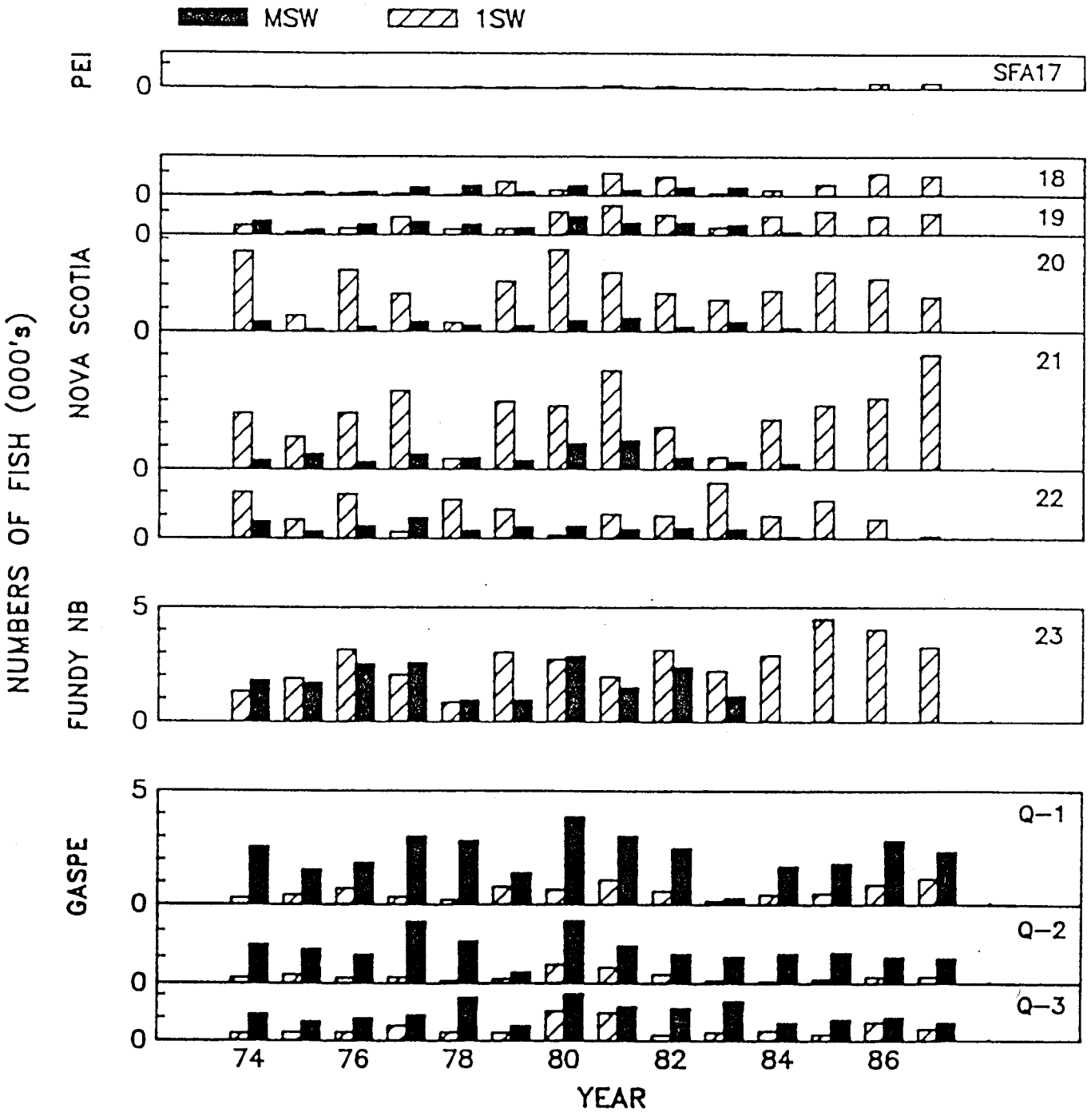


Fig. 4 cont'd. Recreational landings by Salmon Fishing Area (SFA).

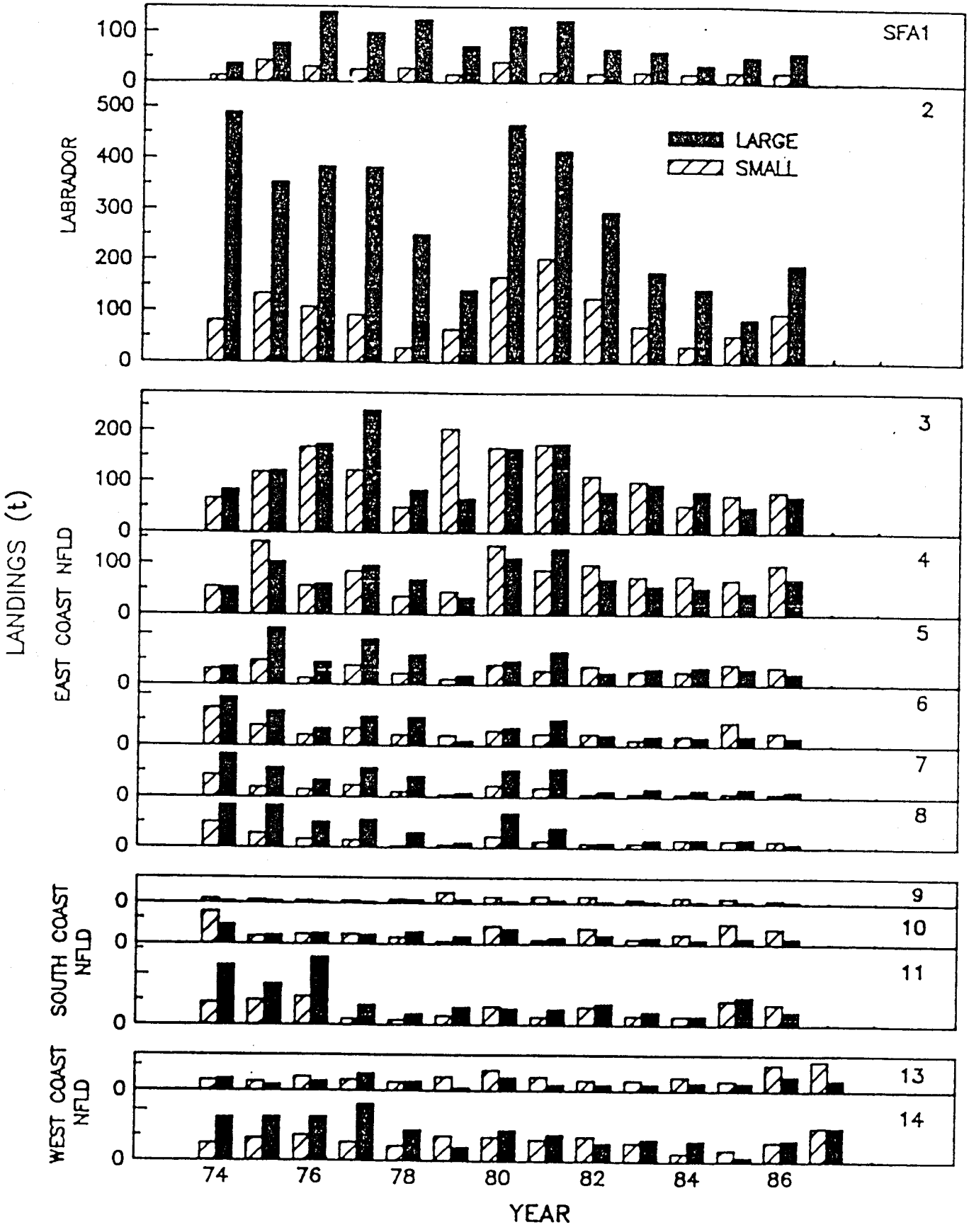


Fig. 5. Commercial landings (t) Newfoundland and Labrador by Salmon Fishing Area (SFA).

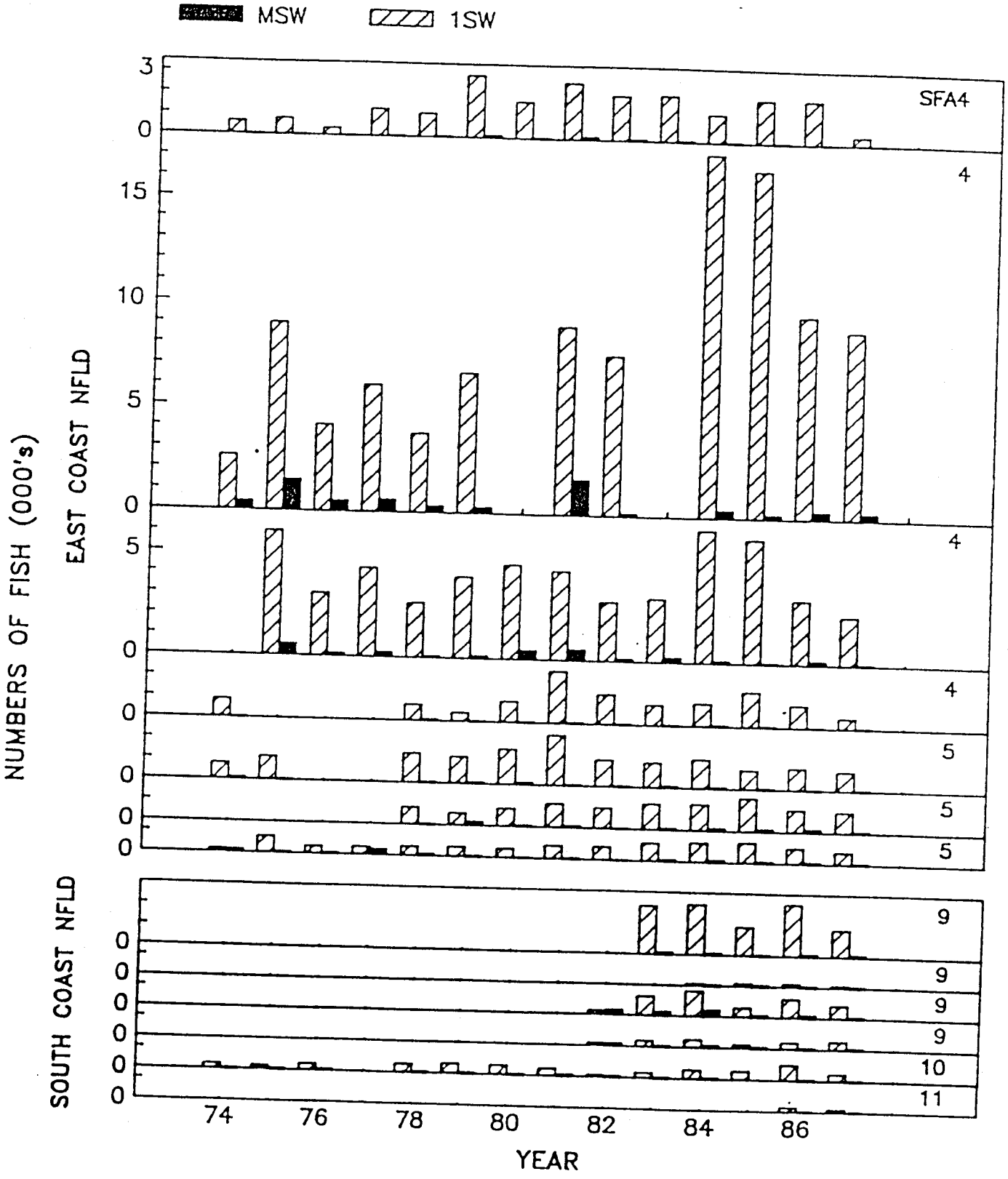


Fig. 6. Fishway counts, top to bottom: Indian, Exploits (Bishop), Exploits (Rattling), Gander, Middle, L. Terra Nova, U. Terra Nova, Biscay Bay, Northeast (Trepassey), Little Salmonier, Colinet, Northeast (Placentia), Grand Bank.

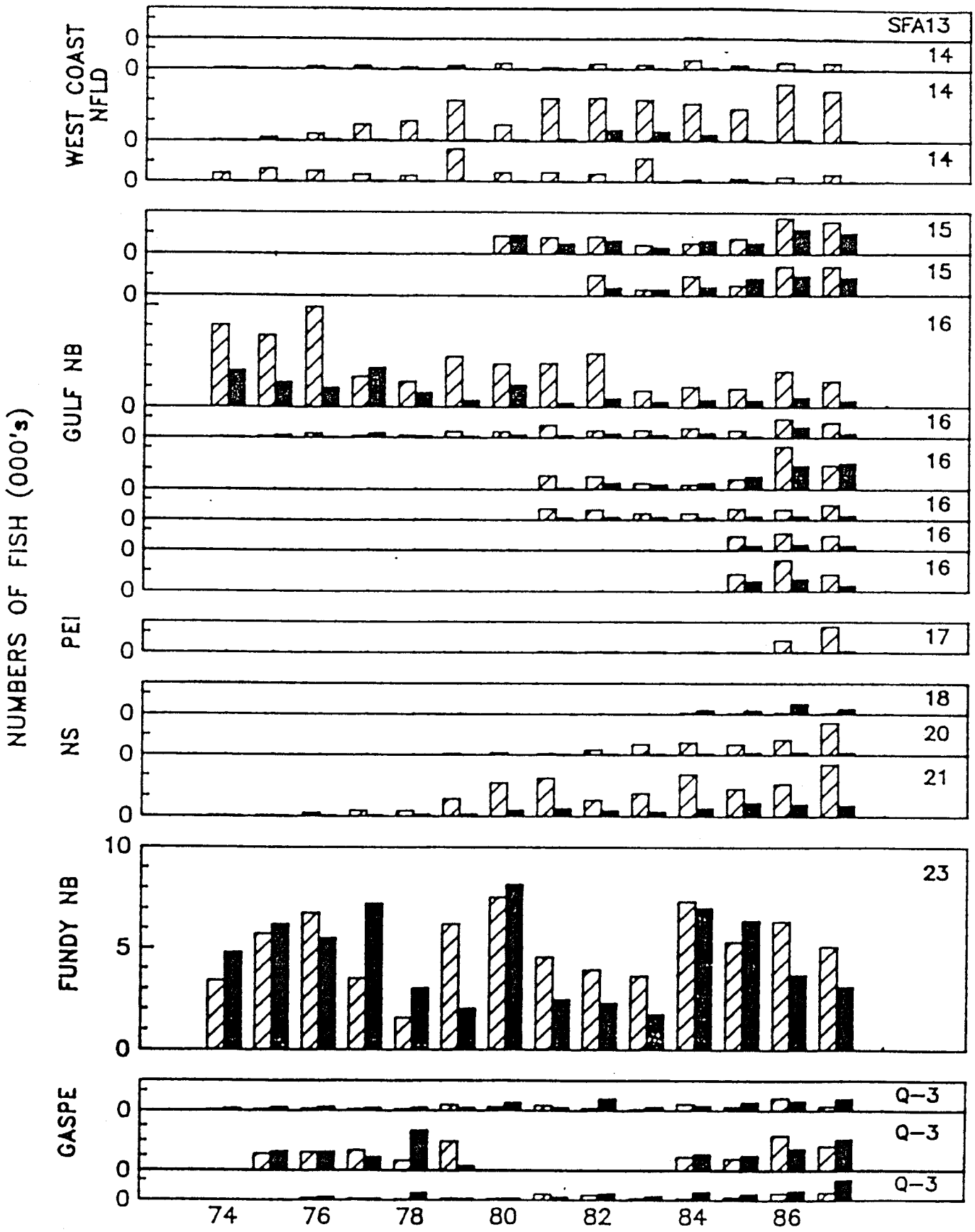


Fig. 6 cont'd. Hughes, Lomond, Torrent, Western Arm, Upsalquitch, Nepisiguit, Miramichi (Millbank), Bartholomew, North Branch, Dungarvon, Northwest Mir. trap, Southwest Mir. trap, Morell, Cheticamp, Liscomb, LaHave, Saint John (Mact.), Mitis, Matane, Madeleine.

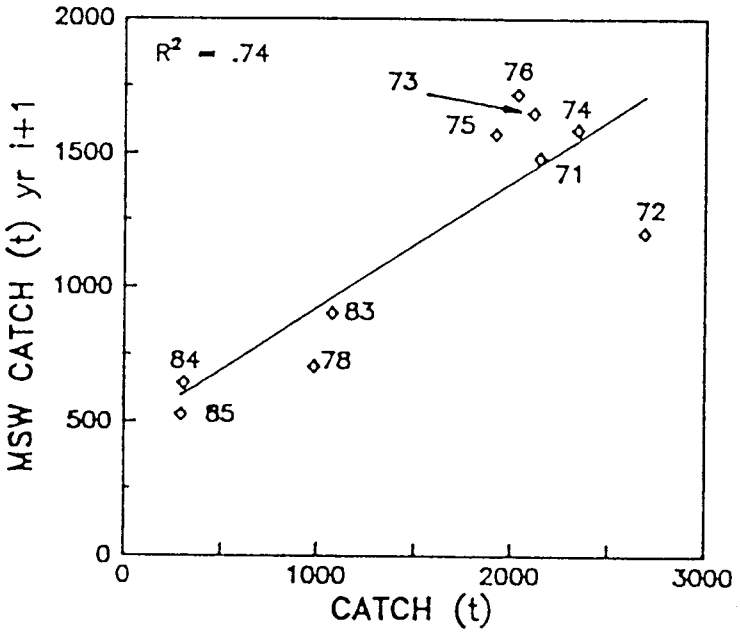


Fig. 7. Canadian MSW catch on Greenland catch. (Excludes years in which Greenland quota constrained catches).

JUNE 1988
REYKJAVIK

ANNEX 9

NORTH ATLANTIC SALMON CONSERVATION ORGANIZATION

NORTH AMERICAN COMMISSION

PAPER NAC(88)8

PRELIMINARY SUMMARY OF 1987 FISHERY FOR USA

PRELIMINARY SUMMARY OF 1987 FISHERY FOR USA

The estimated total run of Atlantic salmon to USA rivers in 1987 decreased by 38% from 1986 levels (Table 1). Most of this drop was due to a 45% decline in the run to the Penobscot River (Table 2). The low total return was disappointing but the return rate per thousand smolts released (3.5) was within the range of Penobscot return rates observed since 1976. Further work is necessary before probable causes of the low return can be ascribed. A noteworthy aspect of the 1987 run of salmon to the Penobscot was an increased percentage of multi-sea winter salmon. The large number of older salmon suggests that the probability of surviving more than two years at sea has increased. This observation is consistent with the hypothesized effect of the fall closure of the Newfoundland fishery.

Runs of Atlantic salmon increased by 11% in the Connecticut River and by 35% in Merrimack River (Table 3) over their respective 1986 values. Although run sizes in most Maine rivers were down, stringent management measures in Maine resulted in a continuing decrease in exploitation rates from 19% in 1984 to 8% in 1987.

Estimation Method

The total run (all sea ages) to USA rivers was estimated from trap catches and reported angler catches. The model employed is similar to that used by the North Atlantic Salmon Working Group of ICES (Anon. 1987, page 15). For rivers that contain a trap counting device,

$$\text{Total Run} = \text{Trap Count} + \text{Angler Catch}/\text{Angler Reporting Rate}.$$

The assumed Angler Reporting Rate of 0.8 (80%) was equivalent to that used by the Working Group for untagged fish. For rivers that do not have counting devices, total run was estimated as

$$\text{Total Run} = \frac{\text{Angler Catch}/\text{Angler Reporting Rate}}{\text{Assumed Exploitation Rate}}$$

The Assumed Exploitation Rate was set at 20%. This value represents a composite of historical data on Maine rivers. Run sizes for the Merrimack and Connecticut Rivers represent the total count of salmon to the river (Table 3). No directed angling for salmon is permitted in either river and incidental catches by anglers must be released.

Reference

Anonymous 1987. Report of the Working Group on North Atlantic Salmon. ICES C.M. 1987/Assess:12.

Table 1. Estimated total run, harvest and homewater exploitation in USA rivers.

Year	Harvest Est.	Total Run	% Exploitation
1984	761	4051	19
1985	706	5824	12
1986	704	6490	11
1987	328	4055	8

Table 2. **Estimated harvest and run size data for Maine rivers. Data obtained from unpublished reports of Atlantic Sea Run Salmon Commission of Maine.**

Year	River	HARVEST		Trap Count	Run Size
		Reported	Estimated		
1984	St Croix		0	244	244
	Dennys	68	85		425
	East Machias	47	59		294
	Machias	33	41		206
	Pleasant	1	1	16	17
	Narraguagus	68	85		425
	Union	0	0	40	40
	Penobscot	360	450	1451	1901
	Ducktrap		0		0
	Sheepscot	22	28		138
	Androscoggin		0	91	91
	Saco		0		0
	Others	10	13		63
	TOTAL		761		3843
1985	St Croix	8	10	342	352
	Dennys	20	25		125
	East Machias	30	38		188
	Machias	32	40		200
	Pleasant	0	0	30	30
	Narraguagus	57	71		356
	Union	1	1	81	82
	Penobscot	336	420	3020	3440
	Ducktrap	15	19		94
	Sheepscot	6	8		38
	Androscoggin	0	0	21	21
	Saco	60	75		375
	Others		0		0
	TOTAL		706		5300
1986	St Croix	5	6	320	326
	Dennys	15	19		94
	East Machias	13	16		81
	Machias	46	58		288
	Pleasant	0	0	19	19
	Narraguagus	45	56		281
	Union	5	6	62	68
	Penobscot	404	505	4125	4630
	Ducktrap	15	19		94
	Sheepscot	11	14		69
	Androscoggin	1	1	80	81
	Saco	3	4	34	38
	Others	0	0		0
	TOTAL		704		6069

Table 2. (cont)

Year	River	HARVEST Reported	HARVEST Estimated	Trap Count	Run Size
1987	St Croix	5	6	370	376
	Dennys	1	1		6
	East Machias	14	18		88
	Machias	4	5		25
	Pleasant	0	0	9	9
	Narraguagus	37	46		231
	Union	5	6	58	64
	Penobscot	158	198	2340	2538
	Ducktrap	0	0		0
	Sheepscot	15	19		94
	Androscoggin		0	26	26
	Saco	13	16	27	43
	Others	10	13		63
	TOTAL		328		3563

Table 3. Estimated total runs of Atlantic salmon to southern New England river undergoing restoration. Data obtained from unpublished US Fish and Wildlife Service reports.

Year	River	
	Connecticut	Merrimack
1983	39	114
1984	92	116
1985	310	214
1986	318	103
1987	353	139

JUNE 1988
REYKJAVIK

ANNEX 10

NORTH ATLANTIC SALMON CONSERVATION ORGANIZATION

COUNCIL

PAPER CNL(88)14

SCIENTIFIC ADVICE FROM ICES

THE REPORT OF THE ADVISORY COMMITTEE ON FISHERIES MANAGEMENT (ACFM) (SECTIONS 1-3.8 AND 6-8.1.2)

REPORT TO THE NORTH ATLANTIC SALMON CONSERVATION ORGANIZATION COUNCIL

1. INTRODUCTION

Questions of interest to a particular Commission, such as the description of high seas fisheries, appear in the section dealing with questions of interest to that Commission, while all questions dealing with homewater fisheries appear in Section 7. Many of the questions posed related to more than one Commission area, and these are answered separately. In this summary, the tables, figures, and appendices referred to are from the Working Group report (Doc. C.M.1988/Assess:16).

2. CATCHES OF NORTH ATLANTIC SALMON

2.1 Nominal Catches

Nominal catches of salmon by country (in tonnes round fresh weight) for 1961-1987 are presented in Table 1. The catches in homewaters broken down into grilse and salmon are shown in Table 2. Figures for 1987 (6,511 t) are provisional, but it appears likely that, when confirmed, they will show a decrease from 1986 except for Canada and Finland, where they are expected to increase.

Lack of information on fishing effort presents major difficulties in interpreting the catch data.

Unreported catches were considered an important component in stock assessment, and it was agreed that methods of assessing unreported catches should be investigated. Unreported catches were defined as:

> harvests which are caught and retained but do not enter into unreported catch statistics; such harvests could be either legal or illegal but would not include catch-and-release mortalities whether they arise from nets or angling gear. Such estimates would not include fish retained by public agencies for broodstock purposes.

Although some countries could not provide data, the unreported catches for all countries were considered to be of the order of 3,000t, which is 500t less than the corresponding amount for 1986.

ACFM notes with concern the importance of non-reported catches, and urges participants to continue to make every possible effort to obtain and contribute such data in accordance with normal ICES procedure.

2.2 Catches in Numbers by Sea Age and Weight

Reported national data from several countries are summarized in Table 3. In most countries, the decline in the reported 1987 homewater catches occurred in both the 1-sea-winter (1SW) and multi-sea winter (MSW) age groups.

3. FRAMEWORK FOR SCIENTIFIC ADVICE ON MANAGEMENT OF SALMON

3.1 Introduction

NASCO asked ICES to discuss scientifically-based approaches for managing salmon in the context of existing fisheries.

There are two aspects to this subject: firstly, to establish a practical management strategy, and secondly, to describe a possible scientific approach to provide supporting advice. The Working Group recognized three principal aims in the management of Atlantic salmon: conservation of stocks, optimization of yields, and minimization of the variability of the yield from each fishery.

Conservation can best be achieved by controlling fishing mortality to ensure an adequate number of spawners in each river system to optimize production each year, and this must be the first priority of salmon management.

It is likely to be difficult to optimize yields in mixed-stock fisheries because individual stocks or stock complexes will vary in their availability to the fisheries. The stocks or stock complexes having the largest proportion of their extant numbers available to the fishery will experience the highest exploitation rates and must, therefore, be the key to optimising exploitation in the fishery. The varying relative productivity of the stocks or stock complexes further adds to the difficulties of managing mixed-stock fisheries.

Wide annual variation in the yield in each fishery may have socio-economic implications that must be considered.

It is fundamental to rational management that scientists estimate a target number of spawners of each sea age or stock component which should be attained each year. This number can be converted into a target "spawning biomass" using appropriate mean weights.

Management strategy should either:

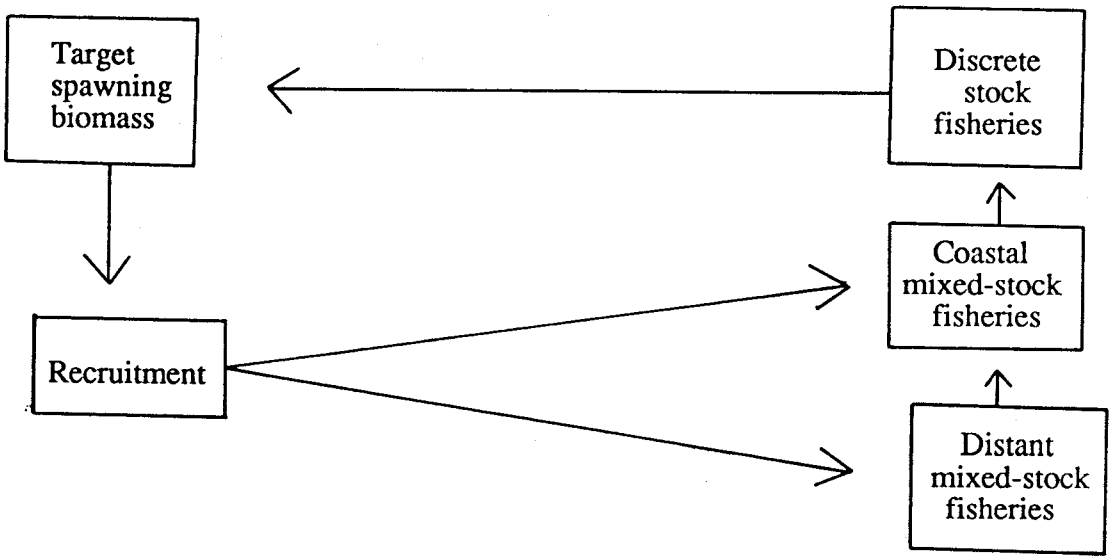
1) permit annual adjustments to harvest levels in all fisheries, or

2) fix the combined harvest of all fisheries at a level sufficiently low to achieve the target spawning biomass of each stock component within normal variations in production, or

3) fix the harvest in mixed-stock fisheries at a level sufficiently low to allow final adjustments to the spawning escapement of each stock component in or close to the river of origin.

3.2 A Conceptual Framework

The diagram below illustrates the type of relationship that could exist between fisheries that must be managed in order to achieve target spawning biomass.



Several models are available which, given sufficient data, can be used to estimate target spawning biomass or production and to assess the effects of varying fishing mortality in one fishery on the harvest in other fisheries and on spawning biomass (see Section 3.6)

3.3 Techniques to Attain Target Spawning Biomass

The ideal system for managing salmon would be to forecast the abundance of all stocks prior to the start of the fisheries each year and then allocate catches to the fisheries on the basis of the distribution of the fish and target spawning escapement.

Existing salmon fisheries cannot be managed within such an ideal framework. Two approaches were discussed which could be used to achieve sufficient spawning escapement for some stock complexes.

A. Real-time management of fisheries

This method utilizes information on stock abundance, either before the fishery commences or while it is in progress. This information is used to close or regulate mixed-stock or discrete fisheries if the abundance of selected stocks or stock components is equal to or less than a predefined target. The method requires:

a) estimates of salmon abundance during the fisheries;

b) techniques to identify stocks;

c) models for estimating the impact of management measures on the predefined abundance targets;

d) enforcement mechanisms for implementation of management measures.

B. Management based on historical performance of the fisheries

This management strategy is one most commonly used at present. The major difficulty with it is that it only reacts to conservation and fishery problems after they occur and operates by trial and error. The method requires:

a) historical data on spawning escapements for a number of stocks;

b) data by stock or stock complex on the contribution to mixed-stock fisheries.

3.4 Proposed Approach to Management

The primary goal of management to ensure target spawning biomass can be achieved by setting harvests in mixed-stock fisheries at a level which would ensure that the number of salmon returning to the vicinity of the river of origin each year is greater than that required for spawning. Adjustments would then be made to fisheries in or near the rivers to ensure that target spawning biomass is attained.

It is not feasible to develop a management strategy or assess its effectiveness by determining the spawning biomass or the fishing mortality of all stocks. Annual assessments and calculations of these parameters should be made on "indicator stocks". An "indicator stock" may be an individual stock or a group of stocks which can represent the stocks in a larger geographic area. For "indicator stocks", it will be necessary to annually estimate the spawning escapement, the fishing mortality in the various fisheries, and the abundance of salmon returning to discrete stock fisheries.

3.5 Estimation of Target Spawning Biomass and Production

There are several approaches which can be used to estimate target spawning biomass when its is not possible to directly obtain reliable figures. One approach would be to apply estimates of densities at various life stages, or adult production from stocks which have similar biological characteristics, i.e. use values from "indicator stocks". Another approach would be to use values from the scientific literature.

3.6 Fisheries Model

Models could be developed for salmon stocks for which sufficient data exist. Eventually these individual models could be linked in order to develop a cohesive picture of interactions among fisheries and used to judge the effectiveness of management measures.

3.6.1 Spreadsheet system

A spreadsheet system available at ICES Headquarters was used by the Working Group to implement a preliminary descriptive salmon model, using standard measures of catches and abundance, traps, tag recaptures, etc. to develop most, but not all, of the necessary parameters for the model.

The model calculates the abundance and catches in each time step; all fish available in the previous time period are accounted for. Examples are shown in Tables 4 and 5 and in Figures 1 and 2.

3.6.2 Fisheries models for selected stocks

The Working Group also examined two conceptual approaches to reducing exploitation on selected salmon stocks. The first, real-time management, is discussed in Section 3.3 above. The second, linear programming, was used to develop time and area closures which minimizes interceptions in mixed-stock fisheries. By adjusting the necessary constraints, the model can provide an objective standard against which management measures can be evaluated.

3.7 Summary

These models are preliminary and may not be available in the immediate future, but, nevertheless, they are the first steps in such descriptions of salmon fisheries in the North Atlantic. The marine life history model is not predictive, but given the appropriate parameter sets, it can provide a descriptive view of the interactions of the various fisheries and spawning escapements.

3.8 ACFM Comments

ACFM notes and commends the constructive discussion on scientifically-based approaches for managing salmon. The Working Group cannot, however, be expected to select overall objectives of management, since this involves the resolution of social and political conflicts, which are beyond its competence. ACFM, therefore, suggests that the Working Group should continue to develop methods for evaluating the consequences (in terms of yield, stocks size, etc.) of management options involving modest changes in the level of exploitation in the main fishery sectors. NASCO should consider how it could make use of such assessments in choosing among such management options, taking into account the biological importance of spawning stock, as discussed by the Working Group.

ACFM also notes the research priorities listed in Section 9 of the Working Group report, which reflect the proposed approach to scientific management, and the data requirements given in Appendix 5 of the Working Group Report. ACFM requests

that countries make every effort to initiate such research and obtain and contribute such data at future meetings of the North Atlantic Salmon Working Group.

6. QUESTIONS OF INTEREST TO THE NORTH AMERICAN COMMISSION OF NASCO

6.1 The Fisheries in 1987

The fisheries in Canada and USA are described under homewater fisheries in Sections 7.1 and 7.11.

6.2 Effectiveness of Management Measures

6.2.1 USA

In 1987, a mandatory registration system for all salmon >64cm in total length caught by anglers was instituted. This is expected to improve the reporting rate for salmon taken in the Maine sport fishery. The management measures initiated in 1985 (Anon., 1987b) are still in effect and have achieved a 50% reduction in the exploitation rate of MSW salmon in the Penobscot River.

6.2.2 Canada

The management measures imposed in Canada in 1984 and 1985 were described in Anon. (1986a and 1987b). Preliminary 1987 figures suggest that the complete closure of some fisheries resulted in a decrease in harvest of 258t of MSW and 25t of 1SW salmon. The delayed opening of the season reduced the 1987 catch by 92t of MSW and 7t of 1SW salmon.

In 1987, legislation requiring market tagging of salmon in the Newfoundland/Labrador commercial fishery came into effect. No information was presented to quantify the impact of this.

6.2.3 Effect of Canadian management measures on USA stocks

It is noted (Anon., 1987b) that area closures and season reductions for 1984 and 1985 should have resulted in an 11% reduction in the harvest of Maine-origin salmon. The closure of the autumn fishery on 15 October 1986 should account for 29% of the 1SW Maine-origin salmon caught in the Newfoundland/Labrador fisheries. The percentages are not additive, however.

The number of Penobscot River MSW fish considered to be both available and vulnerable to distant commercial fisheries in 1986 was 2.5 times more than the average for 1981-1986. Although based on only a single observation, results are consistent with the objective of the management measure which closed the Newfoundland fall fishery.

To assess the combined effect of all measures taken by Canada for 1984-1986, the estimated harvest of 1SW Maine-origin salmon in Newfoundland/Labrador was compared to the Maine run size of 2SW salmon the following year. For the years 1967-1983, the ratio of Newfoundland harvest to homewater run size averaged 0.53, while the value for 1984-1986 was 0.35 (Table 30). The reduced harvest in Newfoundland is consistent with the expected impact of the closure of the fall fishery by Canada in 1986.
Tag recovery information from the provinces of New Brunswick, Nova Scotia, and Quebec should be examined next year to provide a more complete analysis of the impact of these management measures.

6.3 Numbers of Salmon of USA Origin in Canadian Fisheries

6.3.1. Historical catches in Newfoundland/Labrador commercial fisheries by 1 SW salmon which originated in USA

Revised harvest estimates by year and standard week are given in Table 32 and an annual summary in Table 33. The estimates are derived using the same parameters as in 1987 (Anon., 1987b) and the most up-to-date information on tagged and untagged 2SW salmon returning to Maine rivers. The overall change in the estimates across all years is only 0.3%.

The estimated harvest of Maine-origin salmon in Newfoundland and Labrador during 1986 was substantially lower for recent years (Table 33). The higher proportion of harvest in Area 0 and a lower proportion in Area B, compared to previous years, is consistent with the closure of the fall fishery.

An estimated 254 1SW salmon of Connecticut River origin were harvested in Newfoundland/Labrador in 1986 compared to an estimated 649 1SW fish in 1985.

6.3.2. Historical tag recoveries of 1SW and MSW salmon of USA origin in provinces of Quebec, Nova Scotia, and New Brunswick and MSW salmon in Newfoundland/Labrador

Additional information on the annual capture of 1SW and MSW Maine-origin salmon in the commercial fisheries of Quebec, New Brunswick, and Nova Scotia is provided for the period 1963-1987 in Tables 35 and 36. Similarly, new information was provided summarizing the annual capture of tagged MSW salmon of Maine origin in Newfoundland/Labrador fisheries (Table 37). Tag recovery information from these areas should be re-examined in the future in order to provide improved estimates of the impact of management measures.

ACFM notes that this is a recommendation of the Study Group on the North American Salmon Fishery in Appendix 4 of the Working Group report, which ACFM endorses.

6.3.3. Average percentage by number of USA fish in the total harvest of the Newfoundland/Labrador commercial fishery

The average percentage of Maine-origin fish in the total harvest of the Newfoundland/Labrador commercial fishery during the years 1974-1986 (excluding 1979) is presented in Table 38.

6.4 Review of the Report of the Study Group on Acid Rain

6.4.1. Freshwater habitats of Atlantic salmon populations and their vulnerability to acidification

There are nearly 1,000 km of accessible Atlantic salmon rearing habitat in Eastern North America, of which 50 km were classed as vulnerable (on the previous criterion of <50 eq/l mean alkalinity) (Anon. 1987a). Upon further examination, this estimate has now been increased from 50 to 108 km . The minimum standard for vulnerability has been revised to meet one of the following criteria: a) a mean value of 75 eq/l or less (derived from at least eight measurements which include seasonal changes and a realistic change of water flows; or b) when sampling has been or must be limited, a value of 150 eq/l or less, derived from consistent measurements of low summer flows, preferably repeated over a 5-year period as an acceptable approximation of a) above.

The additional area of vulnerable habitat gained by applying new higher alkalinity criteria has not yet been estimated.

For Nova Scotia, the amount of habitat lost as a result of acidification has been revised from 10.3 km to the more conservative value of 6.0 km.

The Study Group revised the production loss due to acidification in the Southern Upland of Nova Scotia (Watt, 1986). The Study Group was concerned about the robustness of the new estimate due to unexplained sensitivity of the estimate of production per unit habitat. The revised estimated loss of Atlantic salmon annual production due to acidification since 1980 has been conservatively estimated to be about 5,600 fish/year.

Following the 1987 advice of the North Atlantic Salmon Working Group (Anon., 1987a), an alternative method of estimating Atlantic salmon production loss was attempted, based on a relationship between pre-smolt production and pH. This method indicated a substantial decline in Atlantic salmon production, but was judged to be insufficiently developed at present.

6.4.2 Trends in acidification of habitat and in the fish populations

No new information on annual or seasonal trends in acidification was reported to the Study Group, and so the 1987 conclusions remained unchanged (Anon., 1987c).

The only historic water chemistry data available was from the Southern Upland region of Nova Scotia, and this revealed that, in at least four rivers during the period 1955-1981, acidity had increased.

Angling catch records for 22 rivers in the Southern Upland zone provide evidence that the Atlantic salmon harvest has declined from 1936 to the present.

6.4.3. Influence of acidification on growth and survival of Atlantic salmon

While the Working Group noted that low pH seems not to affect growth rates, increased acidity (lowered pH) can lead to mortality in several stages of the salmon's life cycle; alevins are particularly vulnerable at hatching and transition to first feeding, while the water-hardened egg is relatively resistent to low pH. Mortality can also occur in parr and smolts if the pH is rapidly reduced.

If pH falls to 4.7, juvenile production will tend to fall below the lower limit for maintenance of the population. Production stays below carrying capacity at more moderate pH levels up to about 5.6. It is also apparent that low pH levels will drastically limit reproductive success to the point where a stock may disappear before food supplies are themselves impoverished.

6.4.4 The effectiveness of mitigation measures

The only satisfactory permanent solution to the problem of acidification of Atlantic salmon habitat would be the elimination of the source of acidity.

Feasible short-term mitigation measures are liming, stocking, and the preservation of genetically diverse stocks. Liming has been used successfully in Europe and North America. Hatchery-reared stocks are most useful in situations where production declines are not yet severe. Preservation of the gene pool and selection of acid-resistant stocks require further research and development before implementation would be practical.

6.4.5 Recommendations

ACFM endorses the recommendations of the Study Group on Acid Rain (Appendix 4 of the Working Group report).

7. HOMEWATER FISHERIES

Section 7 of the Working Group report describes the various homewater fisheries.

The information from most countries allows a description of the fishery according to the various types of gear, contribution of fish from other countries, and status of stocks. Some countries were able to provide exploitation rates in some fisheries.

Effectiveness of management measures is commented on for most countries. For Canada, this is dealt with specifically in Section 6.2 above.

It is envisaged that the information in this section could be helpful in building a descriptive model of salmon in the North Atlantic.

8. GENERAL TASKS

8.1 Compilation of tag data

NASCO requested ICES to compile information on tagging carried out on Atlantic salmon.

8.1.1 Compilation of tag release data for 1987

About 1.2 million microtags and 0.4 million external tags were applied to Atlantic salmon in 1987 (Table 43). In addition, 1.3 million salmon were finclipped. Thus, more than 2.9 million fish were marked.

The Working Group prepared a separate report on salmon tagged or marked in 1987.

8.1.2 Tagging data base

ACFM notes the progress made by the Working Group in assembling tagging data, and endorses the Working Group's conclusion that there is no need for NASCO to develop a tagging data base as long as the Working Group can continue to provide this service.

JUNE 1988
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ANNEX 11

NORTH ATLANTIC SALMON CONSERVATION ORGANIZATION

NORTH AMERICAN COMMISSION

PAPER NAC(88)6

PROGRESS REPORT OF ACTIVITIES OF THE BILATERAL SCIENTIFIC WORKING GROUP ON SALMONID INTRODUCTIONS AND TRANSFERS

PROGRESS REPORT OF THE BILATERAL SCIENTIFIC WORKING GROUP ON SALMONID INTRODUCTIONS AND TRANSFERS FEBRUARY 17-18, 1988

The Bilateral Scientific Working Group on Salmonid Introductions and Transfers has focused its activities on establishing Fish Health and Genetics Subgroups as approved by NAC at its June 1987 meeting in Edinburgh. The Working Group held a meeting in December 1987 and formally established the two Subgroups. The minutes of the meeting, including Terms of Reference and a list of members, are appended.

The Working Group is satisfied that we have "top-notch" dedicated scientists on the Subgroups and the tasks will be accomplished on schedule. The primary task of the Subgroups is to develop protocols and/or model fish health and genetics programs for the protection of "wild" stocks related to the introductions and transfers of salmonids in the NAC area. Protocols related to ecological concerns will be developed by the Bilateral Working Group. The schedule of activities is:

(a) Progress report of activities leading to protocol development - due April 1, 1988

(b) Draft report containing protocols - due December 31, 1988

(c) Consultation will occur between Bilateral Scientific Working Group, Subgroups, and states and provinces during January and February 1989

(d) Final report of protocols - due March 1989.

The two Subgroups have organized their assignments and have delegated specific work assignments to each member. The USA representatives asked the Genetics Subgroup to provide advice on a question related to the genetics aspects of the Connecticut River Atlantic Salmon program. This was discussed by the Subgroup at their meeting and advice was provided. Although this was not a request from NAC, it demonstrates the importance of such a forum for exchange of scientific knowledge.

A request has been sent to provincial and state agencies for information pertaining to introductions and transfers of salmonids in 1987 and those proposed for 1988 and 1989. A response was requested by January 15, 1988. The response has been slow in coming in; therefore this information is not available for this report, but will be available for the June meeting.

The ICES Working Group on Introductions and Transfers of Marine Organisms has invited the co-chairmen of the Bilateral Scientific Working Group to attend their meeting in June 1988. A letter of acceptance was submitted for at least one individual to attend. This liaison was requested by NAC at its meeting in June 1987.

MINUTES OF THE MEETING OF THE BILATERAL SCIENTIFIC WORKING GROUP ON SALMONID INTRODUCTIONS AND TRANSFERS (NASCO-NAC)

(Joint meeting with subgroups)

Rockport, Maine - December 8-9, 1987

The attendees at the meeting are listed in Appendix 1 and the agenda is in Appendix 2. Mr R Cutting, DFO Halifax, replaces Mr Gary Turner as a Canadian representative. Co-chairmen will draft a letter to Gary Turner thanking him for his contributions to the Working Group.

1. Review assignments from previous meeting

(a) Check with Dr M Windsor about representation at meetings of the ICES Working Group on Introductions and Transfers of Aquatic Organisms:

- Dr Windsor suggests that representation be arranged between the Chairmen of the two working groups.

(b) Obtain a number from NASCO for the final report:

- The report has been published as NASCO Annex 13, NAC(87)20.

(c) Finalize inventory and forward to D Goldthwaite.

- Completed as Appendix 8 of NASCO Annex 13, NAC(87)20.

(d) Arrange next meeting in Bangor area for December:

- The meeting arranged and held as a joint meeting of subgroups (December 8-9).

(e) Contact C Sindermann about ICES representation:

- Dr Sindermann invited co-chairmen or alternates to a meeting with the ICES Working Group on Introductions and Transfers of Marine Organisms in Edinburgh, Scotland in June 1988. A letter was drafted to Dr Sindermann with a positive response.

2. Inclusion of rainbow trout and/or brown trout in the inventory

The present inventory contains introductions of rainbow trout and brown trout from west of the Continental Divide and for imports into each country. It was decided that the inventory should include introduction of (a) anadromous rainbow trout (steelhead) and (b) brown trout destined for the eastern seaboard. Resident populations of rainbow trout and brown trout are widely distributed in the northeastern United States, and including, in the inventory, the introductions of these species into the northeastern US would not be practical. However, in Quebec, Maritimes, and Newfoundland, rainbow trout and brown trout have limited distribution. Both species may have an adverse ecological impact on Atlantic salmon populations. Therefore, an attempt will be made to include these in the inventory.

3. Request for inventory items for 1987 and proposals for 1988

A request for inventory items for 1987 and proposed introductions for 1988 and 1989 should be sent to appropriate agencies as soon as possible. Included in the request should be a copy of the present inventory and a copy of NAC policy statement on Introductions and Transfers of Salmonids. Agencies should update and correct existing inventory. Covering letter to agencies should inform agencies that the information which they submitted on fish health was not included in the table because of difficulty in formatting the tables. The inventory items and proposals for introductions and transfers should be received by January 15, 1988 and forwarded to R Cutting.

4. Update on activities of the Great Lakes Fishery Commission with respect to upcoming workshop

The Great Lakes Fish Disease Control Committee has recommended that an introductions policy be developed for the Great Lakes Basin. The proposed policy would focus on fish community objectives and on maintaining the biological integrity of the Great Lakes ecosystem. A "model program" with protocols will be developed for implementing the policy. Once the policy and model program are available in reviewed form, a workshop will be scheduled in order to achieve consensus on wording and to produce recommendations for implementation. A draft policy and model program is scheduled to be available for review in May 1988 and the workshop will be held in 1989.

The Great Lakes Fishery Commission has been requested to fund the development of (a) an inventory of current and prospective laws, regulations and policies governing the introductions of exotic species into the Great Lakes Basin and (b) information on the impacts of previous introductions of exotics.

The Bilateral Working Group decided that a compendium similar to the review of Great Lakes laws for the Northwest Atlantic Commission area would be developed. Regulations and penalties should be included. Members are to act on this item within the next year.

David Goldthwaite agreed to keep members informed of progress by the Great Lakes Fisheries Commission in developing policy and protocols for introduction of exotics.

5. Representation on ICES Working Group

One or both of the co-chairmen will attend the May-June meeting of the ICES Working Group on Introductions and Transfers of Marine Organisms. Further participation will depend on outcome of this meeting but it is assumed that at least one representative will attend.

6. Discuss Direction for Subgroups

D. Goldthwaite and R. Porter discussed the background to the formation of the subgroups, as well as the Terms of Reference and initial questions to be addressed (Appendices 3 and 4).

Dr Sandy Campbell agreed to chair the Fish Health Subgroup and Dr Henry Booke agreed to chair the Genetics Subgroup. The timetable for completing the assigned task was agreed upon and is as follows:

(1) Progress Report - April 1, 1988
(2) Draft report of protocols - December 31, 1988
(3) Final report - March 1989.

Consultations with the provinces, states and users will occur (January-February 1989) after the draft report is completed.

Some general guidelines were established for the subgroups.

- Meetings are to be held at the discretion of the subgroups, but need to be approved through the Bilateral Scientific Working Group if funding is required. It is expected that 1 or 2 meetings will be necessary in 1988.

- Outside expertise may be invited, but such proposals also need clearance by the Bilateral Scientific Working Group if funding is required.

- Subgroup meetings should be conducted in a manner such that information brought to the meeting is in form of scientific working papers. These should receive numbers and be kept on file by the Chairman of each subgroup. This procedure will keep a track record of the material leading to decisions on development of the protocols.

- Minutes will be kept of each meeting and distributed to subgroup members and to members of the Bilateral Scientific Working Group.

- Guideline documents for Subgroups include the introductions protocols recently approved by ICES and the Great Lakes Fishery Commission's Fish Health Disease Control and Model Program.

A third action item was added to the list for the Genetics Subgroup at their request: "Provide a complete list of identifiable populations or strains (of Atlantic salmon) stocked historically in various river systems".

7. Inclusion of ecological concerns in Manual of Procedures and Protocols

R. Cutting and Rex Porter are to draft protocols related to ecological concerns arising from introductions and transfers. This activity will occur on the same schedule as listed above for the Subgroups.

ACTION ITEMS

Agenda Item	Action + Deadline	Person
3	Request inventory of introductions and transfers, 1987 and proposed for 1988/89. Send to Dick Cutting (Due Date: Jan 15,88)	Co-chairmen
4(a)	Information on progress of Great Lakes Fishery Commission in developing policy and protocols (as available).	D Goldthwaite
4(b)	Develop a compendium of existing regulations related to introductions and transfers. These are to include any regulations on penalties (due date Dec 88)	Co-chairmen
6	Subgroups will provide minutes to the Bilateral Working Group for each of their meetings. Subgroups will provide: (1) progress report - April 1, 88 (2) draft report of protocols - Dec 1988 (3) final report - March 1989	S. Campbell H. Booke
7	Draft protocols dealing with ecological concerns due to introductions and transfers (due date: Dec 31, 88)	R. Cutting R. Porter

APPENDIX 1

LIST OF ATTENDEES

Bilateral Scientific Working Group

D. Goldthwaite	- USA Co-chairman
R. Porter	- Canadian Co-chairman
R. Cutting	- Canada
T. Spurr	- USA

Fish Health Subgroup

M. Campbell	- Canada (Chairman)
G. Bullock	- USA
A. Incerpi	- USA
D. Locke	- USA
G. Olivier	- Canada
R. Peloquin	- Canada

Genetics Subgroup

H. Booke	- USA (Chairman)
J. Bailey	- Canada
C. Kruger	- USA
J. Ritter	- Canada
R. Simon	- USA

APPENDIX 2

AGENDA

Joint meeting of Bilateral Scientific Working Group on Salmonid Introductions and Transfers and Fish Health and Genetics Subgroups

Rockport, Maine - December 7-8, 1987

1. Review assignments from previous meeting.
2. Discussion on inclusion of rainbow and/or brown trout in the inventory.
3. Request for inventory items for 1987 and proposals 1988.
4. Up-date on activities of Great Lakes Fishery Commission (GLFC) with respect to up-coming workshop.
5. Representation on ICES Working Group.
6. Discuss direction for subgroups.
7. Inclusion of ecological concerns in Manual of Procedures and Protocols.

APPENDIX 3

FISH HEALTH SUBGROUP

Terms of Reference

(1) Provide scientific advice and comments, as requested, to the North American Commission's Bilateral Scientific Working Group on Salmonid Introductions and Transfers on matters related to the potential fish health impact on "wild" Atlantic salmon stocks of eastern Canada and the United States resulting from proposed introductions or transfers of any salmonid to these areas. (Generally, these activities will center on answering questions and preparing protocols).

(2) Develop and recommend protocols and/or model fish health programs for the protection of "wild" Atlantic salmon stocks from adverse effects due to the introduction and transfer of salmonids in northeast North America (refer to the GLFC's NEASC's and ICES' Model Programs). Develop it in such a fashion that all affiliated agencies can endorse its content. Recommend modifications to these procedures and programs as new information becomes available.

(3) During deliberations review items of interest of a fish health nature affecting Atlantic salmon and identify high priority research needs associated with fish health issues.

(4) The Subgroup will provide a report, to the Group, of Subgroup activities by the end of March annually.

(5) Deliberations of the Subgroup should be conducted through consensus, Chairmanship will rotate annually between nations, and with approval of the Group, advisors may be invited to address specific problem areas.

Initial Activities for the Fish Health Subgroup for 1987/88

(1) Develop protocols and/or model fish health programs for the protection of "wild" stocks related to introductions and transfers of salmonids in northeast North America. Use protocols and/or model programs developed by ICES, GLFC's and NEASC's as a guide.

(2) Is it appropriate to maintain a health status report on all public hatcheries and all "wild" stocks? If so, how best to accomplish this task?

(3) Provide a complete list of major identifiable diseases of concern for Atlantic salmon management in northeastern North America. Specifically, what is the threat of BKD in this context?

APPENDIX 4

GENETICS SUBGROUP

Terms of Reference

(1) Provide scientific advice and comments as requested to the North American Commission's Bilateral Scientific Working Group on Salmonid Introductions and Transfers on matters related to the potential genetic impact on "wild" Atlantic salmon stocks of eastern Canada and the United States resulting from proposed introductions or transfers of any salmonid to these areas. (Generally, these activities will center on answering questions and preparing protocols).

(2) The Subgroup will provide a report to the Group of activities by the end of March annually.

(3) Deliberations of the Subgroup should be conducted through consensus, Chairmanship will rotate annually between nations, and with the approval of the Group, advisors may be invited to address specific problem areas.

(4) Develop and recommend model protocols for the protection of "wild" Atlantic salmon stocks from adverse genetic effects due to the introductions and transfers of salmonids in northeastern North America. Update these as new information becomes available. (Included in such protocols should be recommendations of safe minimum spawning population size for discrete populations to maintain short-term fitness and long-term survival). Use ICES protocols for a guide.

(5) During deliberations review items of interest of a genetics nature affecting Atlantic salmon and identify high priority research needs associated with fish genetic issues.

Initial Activities for the Genetics Subgroup for 1987/88

(1) Develop and recommend model protocols for the protection of "wild" Atlantic salmon stocks from adverse genetic effects due to the introductions and transfers of salmonids in northeastern North America.

(2) Is it the appropriate time to sponsor a workshop to identify and standardize the methodology for identifying and monitoring discrete stocks of Atlantic salmon? If so, what should be its focus and who should attend?

(3) Provide a complete list of identifiable populations or strains stocked historically in various river systems.

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ANNEX 12

NORTH ATLANTIC SALMON CONSERVATION ORGANIZATION

COUNCIL

PAPER CNL(88)28

SYNOPSIS OF ACTIVITIES TO DATE OF THE NORTH AMERICAN COMMISSION'S BILATERAL SCIENTIFIC WORKING GROUP ON SALMONID INTRODUCTIONS AND TRANSFERS

PAPER CNL(88)28

SYNOPSIS OF ACTIVITIES TO DATE OF THE NORTH AMERICAN COMMISSION'S BILATERAL SCIENTIFIC WORKING GROUP ON SALMONID INTRODUCTIONS AND TRANSFERS

Upon the request of the North American Commission of NASCO, the following is presented as a review of our activities to date:

At the May 1984 meeting of the North American Commission of the North Atlantic Salmon Conservation Organization (NASCO) in Ottawa, Mr D Goldthwaite (USA) and Dr G I Pritchard (Canada) were appointed to pursue the establishment of a bilateral scientific working group to examine and develop recommendations for the consideration of the Commission at its next 1985 meeting on the following matters:

1. The potential for adverse impacts on Atlantic salmon stocks resulting from the introduction of Pacific salmonids in the Great Lakes and along the Atlantic coast of North America and ways of minimizing such impact, if noted.

2. Options for protecting the genetic integrity of Atlantic salmon populations including the possible development of protocols for movement or transplants of stocks.

3. The feasibility of and possible ways for achieving more closely aligned fish health programs.

A report was produced and submitted to the North American Commission in May 1985.

As a result of the June 1986 meeting of the Commission, a Bilateral Scientific Working Group (hereafter referred as the Group) was established. The initial membership to the Group consisted of: D Goldthwaite, US Fish and Wildlife Service (US Chairman); T Spurr, Fish and Game Department, New Hampshire, USA; R Porter, Department of Fisheries and Oceans (DFO), Canada (Canadian Chairman); G Turner, DFO Canada; T Carey, DFO Canada.

Terms of Reference for the Group were established. Underlying this listing was the overall charge to develop guidance that is directed toward protecting the Atlantic salmon resource from adverse impacts of importations and transfers of salmonids.

The Group was requested to provide a Progress Report, for the February 1987 meeting of NAC, to address the following items:

1. Thorough review of the previous report (Report of NASCO Scientific Group, 1985) - Introductions of New Salmonids on the Atlantic Seaboard-referenced above.

2. A review of all non-indigenous salmonid introductions (undertaken in 1986 or proposed for 1987) in relation to International Council for the Exploration of the Sea (ICES), revised Code of Practice (Terms of Reference No. 2) and development of an inventory (Terms of Reference No. 4).

A completed report (Annex 13 to NAC(87)20) was presented to and approved by the Commission at the June 1987 meeting of NASCO in Edinburgh. The report provides information which demonstrated that there was the potential for risk of detrimental effects that would result from introduction and transfers of salmonids to the Commission area. In relation to Atlantic salmon populations, these risks are

associated with fish health, genetics and ecological interactions. An integral part of that report was a Summary of Recommendations. Included in the listing of recommendations were three items of special interest that were immediately acted upon by the Commission (see NAC(88)11): acceptance of revisions to the Terms of Reference (attached), a Declaration of Policy and an Action Plan.

In response to the first of these (Terms of Reference), the inventory of introductions and transfers was expanded to cover all such matters in the Commission area since 1975. Such a change has been instituted and reports developed and analyzed for conformance to ICES Code of Practice and compliance with recommendations made to NAC by the Group (referenced above).

The majority of Group activities since the 1987 NASCO meeting have concentrated on the establishment of institutional arrangements commensurate with the Action Plan. We now have two Subgroups (Fish Health and Genetics) in place that have been provided with their own Terms of Reference and are independently developing protocols that will provide guidance when importing or transferring stocks or strains of fish into or within the Commission area. During these deliberations, these groups are making maximum use of protocols and/or model programs that are already in existence. For example, the Model Fish Health Program of the Great Lakes Fishery Commission, the ICES Code of Practice, the EIFAC Code of Practice, the American Fisheries Society's Position on Introductions of Aquatic Species, the Colorado River Fish Health Cooperative's Guidelines, the New England Salmonid Fish Health Policy, and others have been and are being utilized, where appropriate, in development of these new protocols.

An additional subgroup has been established to address the issues related to ecological interactions in the wild. It will develop draft protocols as well. At this point, it is a smaller group composed of two Canadian members, but will expand as the drafted material is reviewed.

Ultimately, these three draft protocols will be developed into final draft form (by the end of December 1988) and will be provided to the Group who will then combine them into an overall set of protocols or a model program to be completed for Commission approval at the June 1989 NASCO Meeting. This would then serve as guidance for the various regulatory agencies as they develop legislation to deal with introductions and transfers in a biologically sound manner.

Co-Chairmen
Bilateral Scientific Working Group

TERMS OF REFERENCE
FOR NASCO
NAC BILATERAL SCIENTIFIC WORKING GROUP ON SALMONID INTRODUCTIONS AND TRANSFERS

1. Provide advice and comments to NASCO-NAC on matters related to the potential impact (genetic, ecological or pathological) on "native" Atlantic salmon stocks of eastern Canada and the United States resulting from proposed introductions or transfer of any salmonid to these areas.

2. Review all non-indigenous salmonid introductions in relation to the ICES/EIFAC "codes of practice to reduce the risks of adverse effects arising from introduction of non-indigenous species".

3. Review and develop, mechanisms and protocols related to the introduction or transfer of salmonids into the waters of eastern Canada and/or the United States with respect to their potential impacts on native salmonids.

4. Maintain an inventory of all approved introductions and transfers of all salmonids into Lake Ontario and the Atlantic coast of North America since 1975.

5. Establish and maintain a liaison with the appropriate ICES/EIFAC working groups on introductions and transfers of fish and on genetics; and if required, participate in joint meetings to consider questions of mutual interest.

JUNE 1988
REYKJAVIK

ANNEX 13

NORTH AMERICAN COMMISSION

PAPER NAC(88)12

INCREASED IMPACT OF THE SALMON FISHERY IN STATISTICAL AREAS A AND B, NORTHEAST NEWFOUNDLAND, ON USA SALMON STOCKS

For the second consecutive year, catches of Atlantic salmon have increased in the commercial fisheries of Newfoundland and Labrador. Though fishing in most of the statistical areas of the Newfoundland region do not severely impact US origin stocks, the United States is most concerned about the increased catches in Areas A and B. The catches in these areas alone account for 56% of all interceptions that have occurred in Newfoundland since 1967. Unlike the other statistical areas on the Newfoundland northeast shore and Labrador, the catches in Areas A and B are at levels well above recent trends. The combined catch for Areas A and B in 1987 was 238 tonnes above the previous 5 year mean and 166 tonnes above the previous 10 year mean. These statistical areas continue to be the principal areas of interception of US origin salmon despite extensive reductions in licensed fishing effort via the buy-back program sponsored by the Canadian government.

The Working Group on North Atlantic Salmon has developed, for consideration by NASCO, a framework for management of Atlantic salmon which describes management goals and techniques potentially useful in this specific situation. The Working Group defines three general approaches to the implementation of management. The most applicable of these approaches is what the Working Group describes as management based upon the historical performance of the fishery. In examining historical trends in the Newfoundland fishery, we see shifts in the distribution of catch which we believe may affect significantly U.S. origin salmon.

Catches in statistical areas A and B, Newfoundland, have changed independently of other northeast Newfoundland areas (C and D) and Labrador (Area O). The percent contribution of Areas A and B to the total catch of northeast Newfoundland and Labrador (Areas A, B, C, D, and O, only) has varied greatly since 1979. The most recent increase in Areas A and B, despite attempts to control effort, poses a serious concern to the United States. A mechanism to avoid changes in the interception of U.S. salmon, consistent with a stable fishery, is in order.

During the period 1978-87 (10 years), the average annual catch in Areas A and B was 385 tonnes. If we look at the period 1975-84, the ten year period preceding the current Canadian Salmon Management Plan, the average catch was 416 tonnes. Clearly, the catch of 551 tonnes in 1987 is well above either of these historical averages. Tag returns reported through ICES and evaluated by the Working Group show that the interception of U.S. fish in these Areas are proportionate to the catch. Therefore, to help stabilize the interception of salmon of U.S. origin, which are significant to the United States, and be consistent with Article 7 of the Convention, the United States proposes that the Government of Canada establish, beginning in 1989, a maximum allowable catch in the coastal fishery of statistical areas A and B. We further propose that the maximum allowable catch should be no greater than 416 tonnes.

JUNE 1988
REYKJAVIK

ANNEX 14

CNL(88)40

DRAFT DECISION OF THE COUNCIL TO REQUEST SCIENTIFIC ADVICE FROM ICES

The Council decides to request the following scientific advice from ICES:

3) With respect to Atlantic salmon in the North American Commission area:

(a) describe events of the 1988 fisheries with respect to gear, effort, exploitation rate, composition and origin of the catch, and assess the status of the stocks;

(b) evaluate the effectiveness of new, existing, or proposed management measures for home waters and interception fisheries on stocks occurring in the Commission area;

(c) continue the development of models to describe the fishery interactions and stock dynamics in order to estimate the effects of management measures;

(d) specify data deficiencies and research needs;

(e) if new information is available, provide estimates of the amount of salmon habitat available, areas vulnerable to acidification, areas lost to production and the number of salmon lost due to acidification.

(f) NASCO has decided to implement a trial voluntary 4 year lottery reward system to encourage the return of external tags. This system is to be implemented beginning in 1989. What are the effects this reward system may have on the rate of return of these tags and how might this improve or otherwise affect the scientific analyses or the development of scientific advice.

ANNEX 15

NORTH ATLANTIC SALMON CONSERVATION ORGANIZATION
FIFTH ANNUAL MEETING OF THE NORTH AMERICAN COMMISSION
17-18 FEBRUARY 1988, AT THE DELTA HOTEL,
MONTREAL, CANADA
AND 13-17 JUNE 1988, REYKJAVIK, ICELAND

LIST OF NORTH AMERICAN COMMISSION PAPERS

PAPER NO.	TITLE
NAC(88)1	Provisional agenda
NAC(88)2	Draft Agenda
NAC(88)3	1987 Statistics on Canadian Salmon
NAC(88)4	CAFSAC Advice for 1988
NAC(88)5	1987 Canadian Atlantic Salmon Management Plan
NAC(88)6	Progress Report of the activities of the Bilateral Scientific Working Group on salmonid introductions and transfers
NAC(88)7	Agenda
NAC(88)8	Preliminary summary of 1987 fishery for USA
NAC(88)9	Draft Report of the Fifth Annual Meeting of the North American Commission
NAC(88)10	Election of Officers
NAC(88)11	Report of Activities of the Bilateral Scientific Working Group on Salmonid Introductions and Transfers 1988
NAC(88)12	Increased impact of the salmon fishery in statistical areas A and B, Northeast Newfoundland, on USA salmon stocks
NAC(88)13	Report of the Fifth Annual Meeting of the North American Commission
CNL(88)14	Report of the ICES Advisory Committee on Fisheries Management (ACFM)
CNL(88)28	Synopsis of activities to date of the North American Commission's Bilateral Scientific Working Group on salmonid introductions and transfers
CNL(88)40	Draft decision of the Council to request scientific advice from ICES

NOTE: This list contains all papers submitted to the Commission prior to and at the meeting. Some but not all of these papers are included in this report as annexes.