REPORT OF THE

NINTH ANNUAL MEETINGS

OF THE

NORTH AMERICAN COMMISSION

15-16 APRIL 1992
MONTREAL, CANADA

9-12 JUNE 1992
WASHINGTON DC, USA

NORTH-EAST ATLANTIC COMMISSION

9-12 JUNE 1992
WASHINGTON DC, USA

WEST GREENLAND COMMISSION

9-12 JUNE 1992
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CHAIRMAN:	DR GABY WARD (CANADA)
ACTING CHAIRMAN: (from 15 April 1992)	MR DAVID RIDEOUT (CANADA)
VICE-CHAIRMAN:	MR STETSON TINKHAM (USA)
RAPPORTEUR:	MR STETSON TINKHAM (USA)
SECRETARY:	DR MALCOLM WINDSOR

NAC(92)23

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NAC(92)23

REPORT OF THE NINTH ANNUAL MEETING OF THE NORTH AMERICAN COMMISSION OF THE NORTH ATLANTIC SALMON CONSERVATION ORGANIZATION 15-16 APRIL 1992, MONTREAL, CANADA 9-12 JUNE 1992, DEPARTMENT OF STATE, WASHINGTON DC, USA

1. OPENING OF THE MEETING

1.1 In the absence of the Chairman, Dr Gaby Ward (Canada), the Secretary opened the Ninth Annual Meeting of the North American Commission. The Canadian representative suggested that Mr David Rideout (Canada) serve as interim Chairman until the elections are held at the June meeting. The Commission agreed to this suggestion. The Chairman welcomed the delegates to the Ninth Annual Meeting.

1.2 A list of participants is given in Annex 1.

2. ADOPTION OF THE AGENDA

2.1 The Commission adopted its agenda, NAC(92)22, (Annex 2).

3. ELECTION OF OFFICERS

3.1 The Commission elected Mr Jean-Paul Duguay (Canada) as its Chairman.

3.2 The Commission elected Mr Allen E Peterson Jnr (USA) as its Vice-Chairman.

4. NOMINATION OF A RAPPORTEUR

4.1 The Commission nominated Mr Stetson Tinkham as Rapporteur for the meeting.

5. ACFM REPORT FROM ICES ON SALMON STOCKS IN THE COMMISSION AREA

5.1 The Chairman of the ACFM, Dr Fredric Serchuk, presented the scientific advice from ICES relevant to the North American Commission, CNL(92)12, (Annex 3) prepared in response to a request from the Commission at its Eighth Annual Meeting.

6. REPORT OF THE NAC SCIENTIFIC WORKING GROUP ON SALMONID INTRODUCTIONS AND TRANSFERS

6.1 The Co-Chairman of the NAC Scientific Working Group on Salmonid Introductions and Transfers, Mr Rex Porter, presented a report on the activities of the group in 1991/92, NAC(92)10, (Annex 4). He directed the attention of the Commission to Table 1 of this document which summarises those salmonid introductions and transfers in the Commission area which were from west of the North American Continental Divide or from Europe, which were made in 1991, and those proposed for 1992.

6.2 The Co-Chairman referred to the draft protocols on salmonid introductions and transfers contained in document NAC(89)13 and reported that Canada's comments on this document had been received. The representative of the United States reported that comments would be forthcoming, following consultation with officials from the New England states. The Parties agreed that the Scientific Working Group should proceed to revise the document for consideration at the June meeting. At the June meeting, Dr Porter tabled revised draft summary protocols, NAC(92)19, (Annex 5) incorporating the results of the consultations. The Commission adopted these Protocols and recommended that the full Protocols be submitted to the Secretariat for publication in English and French in a format similar to the "Guidelines to Minimise the Threats to Wild Salmon Stocks from Salmon Aquaculture". The Commission expressed its gratitude to the Working Group for their sustained excellent work in preparing the document.

6.3 The representative of Canada questioned the status of a proposed project to introduce Chinook salmon in the Delaware River in the United States. The representative of the US explained that the US Fish and Wildlife Service would appreciate comments from the Government of Canada as part of the formal process established under the National Environmental Policy Act in the US. The Commission decided not to refer the matter to the Scientific Working Group at this time, in the expectation that Canada would provide formal comments to the US on the proposal.

6.4 The United States reported that the NASCO "Guidelines to Minimise the Threats to Wild Salmon Stocks from Salmon Aquaculture" had been distributed by the Secretary to all Atlantic salmon aquaculture operations in the State of Maine.

7. IMPACT OF ACID RAIN ON ATLANTIC SALMON

(a) ACFM Report from ICES

7.1 There had been no question proposed to ICES on this question last year and the representative of ICES indicated that no new information had been prepared.

(b) Review of Mitigative Measures

7.2 At the Montreal meeting the representative of Canada tabled a draft letter to the Co-Chairs of the Air Quality Committee of the Canada-US Air Quality Agreement. The Commission requested the Secretary to transmit this letter and report back to the Commission with the response.

7.3 At the June meeting the Secretary reported that he had received a reply from the US Co-Chair, NAC(92)18, (Annex 6). The Commission requested the Secretary to contact the Co-Chairs with a view to holding a Working Group meeting of atmospheric and fisheries scientists from the US and Canada to develop a complete response on this question. It was agreed that the report of this meeting should be available at the next annual meeting of the Commission.

8. REVIEW OF THE 1991 FISHERY

8.1 The representative of Canada presented a report on its Atlantic Salmon catches in 1991, NAC(92)6, (Annex 7). Three CAFSAC reports were also introduced and tabled for consideration by the Commission: Definition of Conservation for Atlantic Salmon, NAC(92)7, (Annex 8); Quantification of Conservation for Atlantic Salmon, NAC(92)8, (Annex 9); and Status of Atlantic Salmon Stocks in 1991, NAC(92)9, (Annex 10).

8.2 The United States presented a report on the Status of Atlantic Salmon Stocks in the US in 1991, NAC(92)11, (Annex 11).

9. REVIEW AND DISCUSSION OF THE PROPOSED 1992 CANADIAN AND US SALMON MANAGEMENT MEASURES AS THEY RELATE TO THE MANDATE OF THE COMMISSION AND TO THE FINDINGS OF THE ACFM REPORT FROM ICES

9.1 At the Montreal meeting the representative of Canada reported that the 1992 Atlantic Salmon Management Plan is still under development, but referred to the program to retire Atlantic Salmon fishing licences, to impose a minimum five-year closure of the commercial salmon fishery for insular Newfoundland and to undertake new fishery management initiatives for recreational salmon fishermen. He noted the government's need to make allowances for the constitutional right of aboriginal peoples to fish for food, NAC(92)13, (Annex 12).

9.2 The representative of Canada also tabled documents on previous licence retirements in Atlantic Canada and Quebec, NAC(92)14, (Annex 13), and a historical review of salmon management measures covering the period 1966-1991 for Atlantic Canada and Quebec, NAC(92)15, (Annex 14).

9.3 The representative of the United States acknowledged the significance of the management measures established by Canada and noted that these measures represent significant progress towards the elimination of interceptions of US origin Atlantic salmon by Canadian fishermen. He recognised that they come at a time when fishery managers in Canada are under difficult pressures from all sectors of the fishery and noted with satisfaction Canada's adoption of these drastic measures and expressed the hope that they would contribute to progress in other areas in NASCO.

9.4 The representative of the US reported that no commercial fisheries for Atlantic salmon are permitted in US waters and that, beginning in 1992, US anglers may retain no more than one salmon per year where recreational fishing for Atlantic salmon is permitted.

9.5 At the June meeting the representative of Canada tabled the 1992 Salmon Management Plan, NAC(92)20, (Annex 15).

10. RECOMMENDATIONS TO THE COUNCIL ON SCIENTIFIC RESEARCH

10.1 The Commission appointed Dr Kevin Friedland (USA) and Dr Wilfred Carter (Canada) to represent the Commission on the Scientific Committee.

10.2 The Commission reviewed document NAC(92)21, and agreed to recommend it to the Council as part of the annual request for scientific advice to ICES. The recommendations from the Commission were considered and modified slightly by the Council. The request to ICES for scientific advice agreed by the Council, CNL(92)51, is contained in Annex 16.

11. REPORT ON THE NASCO TAG RETURN INCENTIVE SCHEME AND ANNOUNCEMENT OF AWARDS

11.1 The Chairman announced that the draw for the prizes in the Tag Return Incentive Scheme was made by the Auditor at NASCO Headquarters on 27 May 1992. The winner of the first prize was Mr Sandy Paul, from Perth, New Brunswick. A list of all prize winners was presented to the Commission, NAC(92)16 (Annex 17). The Commission offered its congratulations to all the prize winners.

12. DATE AND PLACE OF THE NEXT MEETING

12.1 The Commission agreed to hold its next meeting during the Tenth Annual Meeting of the Council, 7-11 June 1993, in Edinburgh, but deferred a decision as to whether to hold an additional meeting until later in the year.

13. OTHER BUSINESS

13.1 The Secretary presented a brief report to the Commission on information he had sought from the Ministère de la Mer in France on salmon fisheries on the islands of St Pierre and Miquelon. France was not a member of the Commission but had cooperated in providing the information. The Commission asked the Secretary to continue this effort and to seek further information as to a breakdown of the salmon catch into recreational, commercial and by-catch.

14. CONSIDERATION OF THE DRAFT REPORT OF THE MEETING

14.1 The Commission agreed the draft report of the meeting, NAC(92)4.

ANNEX 1

NORTH ATLANTIC SALMON CONSERVATION ORGANIZATION
NINTH ANNUAL MEETING OF THE NORTH AMERICAN COMMISSION
15-16 APRIL 1992, MONTREAL, CANADA
9-12 JUNE 1992, WASHINGTON DC, USA

LIST OF PARTICIPANTS

* Denotes Head of Delegation

MEMBERS OF THE COMMISSION

CANADA

MR BRUCE RAWSON	Representative Department of Fisheries and Oceans, Ottawa, Ontario
*MR JEAN E HACHE	Representative Department of Fisheries and Oceans, Ottawa, Ontario
DR WILF CARTER	Representative Atlantic Salmon Federation, St Andrew's, New Brunswick
MR JEAN-PAUL DUGUAY	Representative Gaspé, Quebec
MR DAVID ANGELL	Embassy of Canada
MR EARON FRANCOIS	Ministère de Loisir, Chasse et Pêche, Quebec
MS MAVIS HURLEY	Natural Resources and Energy
MR KEN JONES	Department of Fisheries and Oceans, Ottawa, Ontario
MR DAVID MEERBURG	Department of Fisheries and Oceans, Ottawa, Ontario
MR REX PORTER	Department of Fisheries and Oceans, St John's, Newfoundland
MR DAVID RIDEOUT	Department of Fisheries and Oceans, Ottawa, Ontario
MR JONATHAN ROGERS	Department of Fisheries and Oceans, Ottawa, Ontario

USA

*MR ALLEN PETERSON	Representative National Marine Fisheries Service, Woods Hole, Massachusetts
MR DAVID EGAN	Representative Connecticut River Atlantic Salmon Commission, Guilford
MR CLINTON TOWNSEND	Representative Maine Council of the Atlantic Salmon Federation, Canaan, Maine
DR VAUGHN ANTHONY	National Marine Fisheries Service, Woods Hole, Massachusetts
DR JENNIFER BAILEY	National Marine Fisheries Service, Maryland
MR EDWARD T BAUM	Marine Atlantic Sea Run Salmon Commission, Bangor, Maine
DR KEVIN FRIEDLAND	National Marine Fisheries Service, Woods Hole, Massachusetts
MR ROBERT JONES	Connecticut Bureau of Fisheries, Hartford, Connecticut
MR HENRY LYMAN	Atlantic Salmon Federation, Boston, Massachusetts
MR ARTHUR NEILL	National Marine Fisheries Service, Woods Hole, Massachusetts
MR GILBERT RADONSKI	Sport Fishing Institute, Washington DC
DR PAUL RAGO	US Fish & Wildlife Service, Kearneysville, West Virginia
MR RICHARD ROE	National Marine Fisheries Service, Gloucester, Massachusetts
MR RICHARD SEAMANS	National Marine Fisheries Service, Gloucester, Massachusetts
MR LARRY SNEAD	Department of State, Office of Fisheries Affairs, Washington DC
MR STETSON TINKHAM	Department of State, Office of Fisheries Affairs, Washington DC

DR JAMES WEAVER	US Fish and Wildlife Service, Newton Corner, Massachusetts

OBSERVERS - PARTIES

DENMARK (IN RESPECT OF THE FAROE ISLANDS AND GREENLAND)

*MR EINAR LEMCHE	Representative Greenland Home Rule Government, Copenhagen Office
MR JENS MOELLER JENSEN	Greenland Fisheries Research Institute, Copenhagen

EEC

MR TED POTTER	Ministry of Agriculture, Fisheries and Food, Lowestoft
MR BOB WILLIAMSON	Scottish Office Agriculture and Fisheries Department, Edinburgh

ICELAND

MR ARNI ISAKSSON	Representative Institute of Freshwater Fisheries, Reykjavik
MR ORRI VIGFUSSON	Association of Icelandic Fishing Clubs, Reykjavik

NORWAY

MR SVEIN MEHLI	Representative Directorate for Nature Management, Trondheim

OBSERVERS - NON-PARTIES

ICES

DR EMORY ANDERSON	International Council for the Exploration of the Sea, Copenhagen
DR RICHARD GRAINGER	International Council for the Exploration of the Sea, Copenhagen
DR FREDRIC SERCHUK	National Marine Fisheries Service, Woods Hole, Massachusetts

SECRETARIAT

DR MALCOLM WINDSOR	Secretary
DR PETER HUTCHINSON	Assistant Secretary

ANNEX 2

NAC(92)22
NINTH ANNUAL MEETING OF THE NORTH AMERICAN COMMISSION
15-16 APRIL 1992, MONTREAL, CANADA
9-12 JUNE 1992, DEPARTMENT OF STATE, WASHINGTON DC, USA

AGENDA

1. Opening of the Meeting
2. Adoption of the Agenda
3. Election of Officers
4. Nomination of a Rapporteur
5. ACFM Report from ICES on Salmon Stocks in the Commission Area
6. Report of the NAC Scientific Working Group on Salmonid Introductions and Transfers
7. Impact of Acid Rain on Atlantic Salmon
   (a) ACFM Report from ICES
   (b) Review of Mitigative Measures
8. Review of the 1991 Fishery
9. Review and Discussion of the Proposed 1992 Canadian and US Salmon Management Measures as they relate to the Mandate of the Commission and to the Findings of the ACFM Report from ICES
10. Recommendations to the Council on Scientific Research
11. Report on the NASCO Tag Return Incentive Scheme and Announcement of Awards
12. Date and Place of the Next Meeting
13. Other Business
14. Consideration of the Draft Report of the Meeting

ANNEX 3

COUNCIL

CNL(92)12

REPORT OF THE ICES ADVISORY COMMITTEE ON FISHERY MANAGEMENT (SECTION 4)

4. INFORMATION OF INTEREST TO THE NORTH AMERICAN COMMISSION

4.1 Description of the Fisheries in Canada

The following were new management measures for commercial fisheries in 1991:

1) In 1991, quotas for the Newfoundland commercial salmon fishery were lower by the following amounts in these Salmon Fishing Areas (SFAs) of Newfoundland; SFA 3 (35 t), SFA 4 (22 t) and SFA 13 (10 t). Salmon Fishing Area 1 had an allowance of 80 t, the same as in 1990 (an allowance is an estimate of expected catch and not a limitation on allowable harvest). In other SFAs, quotas remained as in 1990.

2) In the Quebec commercial fishery, the quota in Q7 was reduced by 34% (from 2,755 to 1,809 fish), commensurate with a reduction in a number of licences under a buy-back program. In Q8 and Q9, the quota and fishing seasons remained essentially the same as they were in 1990.

The following were new management measures for recreational fisheries in 1991:

1) The seasonal bag limit for the recreational fishery of Newfoundland-Labrador was reduced from 15 to 10 fish. For conservation reasons, most rivers in SFAs 22 and 23 (Inner Bay of Fundy) were not opened to recreational fishing.

The total salmon landings for Canada in 1991 were 679 t; this is the lowest recorded landing in the 1960-1991 data set. Of the total Canadian landings by weight, 25% were in Quebec, 68% in Newfoundland and Labrador and 8% in the Maritime Provinces. The recreational fisheries harvested 20%, commercial fisheries 75% and the native food fisheries 4% of the total landings by weight.

SFA	1991 Catch (t)	Quota (t)
1	7	80 [1]
2	79	200
3	108	120
4	52	78
5	18	25
6	19	20
7-11	70	82
13-14	81	75
Q7-9	77	NA [2]
Q11	1	15

[1] Allowance
[2] Not applicable

Catches in the Newfoundland commercial fishery are given in the text table below:

Newfoundland Commercial Fishery

Year	1986	1987	1988	1989	1990	1991
Catch (t)	1230	1485	972	867	618	434 [1]

[1] Preliminary

4.1.1 Composition and origin of the catch in 1991

Only salmon of Canadian and USA origin were caught in Canada during 1991. Recaptures of tagged 1SW salmon of USA and Canadian origin occurred in the Newfoundland and Labrador fisheries.

4.1.2 Historical data on tag returns and harvest estimates

ACFM updated the time series of Carlin tag returns and harvest estimates of Maine-origin 1SW salmon in Newfoundland and Labrador. The total harvest of 780 Maine-origin salmon in the 1990 fishery was distributed primarily in SFAs 2-4.

Carlin Harvest, Maine-Origin Salmon

Year	1985	1986	1987	1988	1989	1990
Catch (t)	2288	552	580	393	1722	780

Comparative harvest estimates based on CWT and Carlin tag recoveries were calculated for the communities and Statistical Sections sampled.

4.1.3 Exploitation rates

Exploitation rates for the fisheries in the Miramichi and Margaree were updated and adjusted for mark-recapture techniques. Exploitation is similar to what was previously reported and ranged from 38 to 55%.

4.2 Description of Fisheries in the United States of America

There were no new management measures instituted in the USA during 1991. Recreational catches of Atlantic salmon of 238 were about 63% lower in 1991 than in 1990. The decreased catch was attributed to smaller runs of salmon and slightly (4%) lower licence sales. The number of salmon caught and released in Maine rivers exceeded the number caught and killed.

The average exploitation rate on salmon on all age classes in the Penobscot River was 11.5% which is slightly lower than the exploitation rate (13.5%) observed in 1990.

4.3 Description of Fisheries in France (Islands of St Pierre and Miquelon)

Catch of salmon for the Islands of St Pierre and Miquelon in 1991 was 1 t. There were 13 professional fishermen and 37 recreational fishermen in 1989. Tag returns from previous years indicate that salmon of Canadian and USA origin have been caught in the fisheries of St Pierre and Miquelon.

4.4 Effects of Quota Management Measures Taken in 1990 and 1991 in Newfoundland-Labrador Commercial Fisheries

4.4.1 Effects on Canadian stocks and fisheries

The quantities of large and small salmon affected by the early closure of the fisheries were evaluated by applying the closure date in each SFA, in 1990 and 1991, to the temporal distribution of the landings in each SFA and year, 1984-1989.

For 1990, the estimated mean total weight of salmon not caught due to the early closure of the fisheries was 79 t of small salmon and 39 t of large salmon. The estimated mean numbers of fish not caught were 41,600 small salmon and 8,600 large salmon. The mean predicted weight of small salmon not caught in 1991 is 21 t and for large salmon is 9 t. These weights are equivalent to about 12,600 small salmon and 2,500 large salmon.

In both 1990 and 1991, the quota had a greater effect on proportionally reducing the catch of small salmon than large salmon in most SFAs. This difference in reduction was expected because the large salmon tend to migrate earlier along the coast than small salmon.

4.4.2 Effects on USA stocks

The mean percent harvest on 1SW Maine-origin salmon which would not have been caught if the 1991 closure dates were in effect during fishery years 1984-1989 is 16%. This is 63% less than if the closure dates from the 1990 fishery were used to evaluate the fishery. This difference suggests that the quotas in 1991 were less effective in proportionally reducing the harvest than in 1990.

4.5 By-Catches of Fish, Birds and Marine Mammals in Salmon Drift Net Fisheries

ACFM is not aware of any legal or illegal drift net fisheries for salmon in the North American Commission area.

REFERENCES

Anon, 1982. Report of Meeting of the Working Group on North Atlantic Salmon. ICES Headquarters, Copenhagen, 13-16 April 1982. ICES, Doc. C.M. 1982/Assess:19.

Anon, 1984. Report of Meeting of the Working Group on North Atlantic Salmon. Aberdeen, 20 April - 4 May 1984. ICES, Doc. C.M. 1984/Assess:16.

Anon, 1982. Report of the Working Group on North Atlantic Salmon. Dublin, 5-12 March 1992. ICES, Doc C.M. 1992/Assess:15.

ANNEX 4

NORTH AMERICAN COMMISSION

NAC(92)10

NAC SCIENTIFIC WORKING GROUP ON SALMONID INTRODUCTIONS AND TRANSFERS (PRELIMINARY REPORT OF ACTIVITIES 1991/92)

NAC(92)10

NAC SCIENTIFIC WORKING GROUP ON SALMONID INTRODUCTIONS AND TRANSFERS (PRELIMINARY REPORT OF ACTIVITIES 1991/92)

Rex Porter
Canadian Co-Chairman

David Goldthwaite
USA Co-Chairman

There were two main issues which the Scientific Working Group was asked to address in 1991-92. Consultation and collaboration on these issues were conducted by correspondence.

1. INVENTORY OF INTRODUCTIONS AND TRANSFERS OF SALMONIDS IN THE NAC AREA

State and Provincial reports on salmonid introductions and transfers for 1991, and proposed for 1992, have been tabulated for NAC (attached). Most salmonid introductions and transfers, as in the past, were for aquaculture purposes or for research. Movements of fish for recreational fisheries is the least frequent reason for moving fishes.

The North American Commission previously agreed in principle to the recommendation by the Scientific Working Group that no salmonids be introduced or transferred into the NAC Area from sites west of the North American continental divide, nor from Europe or Iceland. The current inventory update indicates that these types of fish movements are still taking place (Table 1).

Two shipments of rainbow trout eggs (365,000) were imported into the State of Maine from Sweden; Massachusetts imported 60,000 rainbow trout fry from Utah; Ontario imported 70,000 rainbow trout eggs from the State of Washington. The 20,000 rainbow trout eggs and 40,000 coho salmon imported into PEI were for vaccine development and will be destroyed.

2. FINALIZE PROTOCOLS FOR THE INTRODUCTION AND TRANSFERS OF SALMONIDS INTO THE NAC AREA

At its 1991 annual meeting, the NAC agreed that Canada and USA would complete their consultations on the Discussion Document and forward their comments to the Scientific Working Group by September 1992. Comments were received from Canada, but not from the USA. The Working Group has, therefore, delayed revising the protocols and seeks advice from NAC on whether or not to continue with the revisions. The Working Group feels that the protocols are very important for the protection of the Atlantic salmon from adverse effects due to introductions and transfers of fishes. Therefore we propose to proceed with the revisions to the protocols based on the comments received from Canada, and have these available for the June meeting. We request your concurrence with this approach.

Table 1. Summary of salmonid introductions and transfers in 1991 and those proposed for 1992 from west of the Continental Divide and from Europe.

Species	Receiving State/Prov.	Source	Life Stage	Quantity	Comments
Rainbow trout	Maine	Sweden	eggs	365,000	3 shipments
	Massachusetts	Utah	fry	60,000	for public fishing
	Ontario	Washington	eggs	70,000	
		Washington	eggs	70,000	proposed for 1992
	PEI	Washington	eggs	20,000	dev. vaccine
Coho	PEI	BC	eggs	40,000	dev. vaccine

ABBREVIATIONS USED IN TABLES

Countries/Provinces/States

AK	ALASKA
BC	BRITISH COLUMBIA
CAN	CANADA
CA	CALIFORNIA
CO	COLORADO
CT	CONNECTICUT
FIN	FINLAND
ICE	ICELAND
ID	IDAHO
IN	INDIANA
LAB	LABRADOR
ME	MAINE
MAN	MANITOBA
MA	MASSACHUSETTS
MI	MICHIGAN
MT	MONTANA
NB	NEW BRUNSWICK
NFLD	NEWFOUNDLAND
NH	NEW HAMPSHIRE
NJ	NEW JERSEY
NOR	NORWAY
NY	NEW YORK
NS	NOVA SCOTIA
ONT	ONTARIO
OR	OREGON
PA	PENNSYLVANIA
PEI	PRINCE EDWARD ISLAND
QUE	QUEBEC
RI	RHODE ISLAND
SCO	SCOTLAND
SWE	SWEDEN
TN	TENNESSEE
US	UNITED STATES OF AMERICA
UT	UTAH
VT	VERMONT
WA	WASHINGTON
WV	WEST VIRGINIA
WY	WYOMING

Other Terms

ANAD	ANADROMOUS
ATL	ATLANTIC
AQC	AQUACULTURE
BOF	BAY OF FUNDY
BK	BROOK
CK	CREEK
CM	CENTIMETRE(S)
CNTR	CENTRE
DOM	DOMESTIC
E EGGS	EYED EGGS
ENV	ENVIRONMENT
EXP	EXPERIMENTAL/ RESEARCH
FCS	FISH CULTURE STATION
FF	FISH FARM
FING	FINGERLING(S)
G	GRAM
G EGGS	GREEN EGGS
H	HATCHERY
HARB	HARBOUR
IS	ISLAND
JUV	JUVENILE
LAB	LABORATORY
LK	LAKE
LL	LANDLOCKED
MO	MONTH
NW	NORTHWEST
P	PROPOSED
PS	PUBLIC STOCKING
P SMOLT	POST SMOLT
P/S	PARR/SMOLT TRANSITION
PYP	POST-YEARLING PARR
QUAR	QUARANTINE (FACILITY)
REV	REVISION
R	RIVER
RET	RETURN(ING)
SJR	SAINT JOHN RIVER
SKAM	SKAMANIA
SS	STEELHEAD STRAIN
SP	SPRING(S)
STR	STRAIN
TF	TROUT FARM
TR	TRIPLOID
U	UNIVERSITY
UNID	UNIDENTIFIED
UNK	UNKNOWN
UY PARR	UNDERYEARLING PARR
W	WILD
WS	WATERSHED
YEAR	YEARLING
*	REVISION

ABBREVIATIONS USED IN TABLES

Organizations

ASF	ATLANTIC SALMON FEDERATION
ASI	ATLANTIC SALMON (MAINE) INC
ASL	ATLANTIC SMOLTS LIMITED
ASRSC	ATLANTIC SEA-RUN SALMON COMMISSION
AVC	ATLANTIC VETERINARY COLLEGE
CDEP	CONNECTICUT DEPARTMENT OF ENVIRONMENTAL PROTECTION
DEC	DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DFO	DEPARTMENT OF FISHERIES AND OCEANS (CANADA)
EPS	ENVIRONMENTAL PROTECTION SERVICE (CANADA)
FMS	FUNDY MARINE SURVEYORS
GNPDC	GREAT NORTHERN PENINSULA DEVELOPMENT CORPORATION
IAS	INTEGRATED AQUATIC SYSTEMS LIMITED
HML	HUNTSMAN MARINE LABORATORY
MDFW	MASSACHUSETTS DIVISION OF MARINE FISHERIES
MAPA	QUEBEC MINISTERE AGRICULTURE, PECHERIE, ALIMENTATION
MINL	MARINE INSTITUTE OF NEWFOUNDLAND AND LABRADOR
MMOP	MERI MER OCEAN PRODUCTS
MPL	MARICULTURE PRODUCTS LIMITED
MSRL	MARINE SCIENCES RESEARCH LABORATORY
NBNDRE	NEW BRUNSWICK DEPARTMENT OF NATURAL RESOURCES AND ENERGY
NBFWB	NEW BRUNSWICK FISH AND WILDLIFE BRANCH
NEFFI	NEW ENGLAND FISHING ENTERPRISES INC
NHFG	NEW HAMPSHIRE FISH AND GAME DEPARTMENT
NMFS	NATIONAL MARINE FISHERY SERVICE
NSDF	NOVA SCOTIA DEPARTMENT OF FISHERIES
NWAFC	NORTHWEST ATLANTIC FISHERIES CENTRE
NYDEC	NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
OMNR	ONTARIO MINISTRY OF NATURAL RESOURCES
OPI	OCEAN PRODUCTS INCORPORATED
OSL	OCEAN SCIENCES LABORATORY, MEMORIAL UNIVERSITY
SMBDA	ST. MARY'S BAY DEVELOPMENT ASSOCIATION
USFWS	UNITED STATES FISH AND WILDLIFE SERVICE

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1991

CONNECTICUT

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)	TRANSFERS							FINAL DISPOSITION LOCATION (PURPOSE)
		YEAR	NUMBER	STAGE	SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	
ONCORHYNCHUS MYKISS (RAINBOW TROUT)									
7001	MT, INNES HATCHERY (ERWIN)	1987	15000	EGGS	CT, CDEP/BURLINGTON HATCHERY				HOUSATONIC RIVER
8001	TN, ERWIN HATCHERY (ERWIN)	1988	15000	EGGS	CT, CDEP/BURLINGTON HATCHERY				HOUSATONIC RIVER
9001	MT, INNES HATCHERY (ERWIN)	1989	15000	EGGS	CT, CDEP/BURLINGTON HATCHERY				HOUSATONIC RIVER
0001	MT, INNES HATCHERY (ERWIN)	1990	15000	EGGS	CT, CDEP/BURLINGTON HATCHERY	*			NOT YET RELEASED: 17/01/91
0002	MT, INNES HATCHERY (ERWIN)	P1991	15000	EGGS	CT, CDEP/BURLINGTON HATCHERY				
1001	MT, INNES NFH (ERWIN)	1990	15000	EGGS	CT, BURLINGTON SFH				HOUSATONIC RIVER
1002	MT, INNES NFH (ERWIN)	1991	15000	EGGS	CT, BURLINGTON SFH				NOT RELEASED YET 11/2/92
1003	MT, INNES NFH (ERWIN)	1992	15000	EGGS	CT, BURLINGTON SFH				NOT RELEASED YET 11/2/92
SALMO TRUTTA (BROWN TROUT)									
0003	NY, CATSKILL HATCHERY (SEEFORELLEN)	1990	20000	EGGS	CT, CDEP/BURLINGTON HATCHERY	*			NOT YET RELEASED: 17/01/91
0004	NY, CATSKILL HATCHERY (SEEFORELLEN)	P1991	35000	EGGS	CT, CDEP/BURLINGTON HATCHERY				
1004	NY, CATSKILL SFH (SEEFORELLEN)	1990	20000	EGGS	CT, BURLINGTON SFH				SAUGATUCK RESERVOIR
1005	NY, CATSKILL SFH (SEEFORELLEN)	1991	35000	EGGS	CT, BURLINGTON SFH				NOT RELEASED YET, 11/2/92
1006	NY, CATSKILL SFH (SEEFORELLEN)	1992	35000	EGGS	CT, BURLINGTON SFH				NOT RELEASED YET, 11/2/92

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1991

MAINE

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)				TRANSFERS				FINAL DISPOSITION LOCATION (PURPOSE)
		YEAR	NUMBER	STAGE	SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	
ONCORHYNCHUS KETA (CHUM SALMON)									
6001	WA, MINTER CREEK H (MINTER CR/WILD)	1986	500000	EGGS	ME, SEA RUN INC/DEAD RIVER H				CASCO BAY (SEA RANCHING)
ONCORHYNCHUS MYKISS (RAINBOW TROUT)									
9003	FIN, OY BALTIC (BALTIC/DONALDSON DOM)	1989	10000	EGGS	ME, PINE TREE TROUT				(STOCK ACCIDENTALLY KILLED)
9004	FIN, OY BALTIC (BALTIC/DONALDSON DOM)	1989	110000	EGGS	ME, MPL/BINGHAM HATCHERY	1990			
0012	ONT, RAINBOW SP H (DOMESTIC/STEVENSON)	1990	5000	EGGS	ME, PINE TREE TROUT/SANFORD				
0013	ONT, RAINBOW SP H (DOMESTIC/STEVENSON)	1990	15000	EGGS	ME, PIERCE ASSOCIATES/WEST BUXTON				
1002	SWE, ALVDALSLAX AB (OSTER/DONALDSON)	1991	240000	EGGS	ME, MAICULTURE PRO/BINGHAM HAT	1991	50000	F FING	FRENCHBORO (CAGE CULTURE)
1003	SWE, ALVDALSLAX AB (OSTER/DONALDSON)	1991	75000	EGGS	ME, PENOBSCOT SALMON FRANKLIN	P			
1004	SWE, ALVDALSLAX AB (OSTER/DONALDSON)	1991	50000	EGGS	ME, SEA RUN HOLDINGS DEAD RIVER H	P			
1009	ONT, RAINBOW SP H (STEVENSON)	1991	15000	EGGS	ME, PIERCE ASSO W BUXTON	P			
1010	ONT, RAINBOW SP H (STEVENSON)	1991	10000	EGGS	ME, PIERCE ASSP W BUXTON	P			
1011	ONT, RAINBOW SP H (STEVENSON)	1991	30000	EGGS	ME, ROMMY HAINES JR FORT FAIRFIELD				
1012	ONT, RAINBOW SP H (STEVENSON)	1991	10000	EGGS	ME, ROMMY HAINES JR FORT FAIRFIELD				
SALMO SALAR (ATLANTIC SALMON)									
6005	NB, SEA FARMS H (SAINT JOHN RIVER)	1986	25000	SMOLTS	ME, OCEAN PRODUCTS INCORPORATED				EASTPORT CAGES (AQC)
6004	SCO, ALLT MOR H (ARAY RIVER/WILD)	1986	50000	EGGS	ME, SEA RUN INC/DEAD RIVER H	P			
6003	NB, MACTAQUAC FCS (SAINT JOHN RIVER)	1986	106000	EGGS	ME, ASRSC/GREEN LAKE HATCHER	P			AROOSTOOK R (RESTORATION)
6002	NB, MACTAQUAC FCS ? (SAINT JOHN RIVER)	1986	200	ADULTS	ME, ASRSC				AROOSTOOK R (RESTORATION)
7002	NB, FLORENCEVILLE H (SJR/MINTO)	1987	40000	UY PARR	ME, SALEN INCORPORATED				UPPER SJR (ENHANCEMENT)
7004	NB, MACTAQUAC FCS (SAINT JOHN RIVER)	1987	55	GRILSE	ME, ASRSC				AROOSTOOK R (RESTORATION)
7007	SCO, WESTER ROSS H (DOMESTIC)	1987	500000	EGGS	ME, ASI/OQUOSSOC H (REARING)	1989	25000	SMOLTS	CROSS IS (AQUACULTURE)
7006	NB, SEA FARMS (AQC BROODSTOCK)	1987	25000	SMOLTS	ME, OCEAN PRODUCTS INCORPORATED				EASTPORT CAGES (AQC)
7001	FIN, OY BALTIC (DOMESTIC SEA CAGES)	1987	500000	EGGS	ME, OPI/DEBLOIS HATCHERY	1988	27000	SMOLTS	SEE NEXT LINE
7001					ME, OPI/GARDNER LAKE H	1989	22000	SMOLTS	BROAD COVE (AQUACULTURE)
7005	NB, SEA FARMS (AQC BROODSTOCK)	1987	18000	SMOLTS	ME, FRANK RIVER				LUBEC CAGES (AQC)
7008	NB, JAIL IS SALMON (FUNDY/ST JOHN)	1987	1000000	EGGS	NB, SEA FARMS/OROMOCTO H	1989	30000	SMOLTS	JOHNSON BAY (AQUACULTURE)
7003	NB, FLORENCEVILLE H (SJR)	1987	150000	FRY	ME, ASRSC				UPPER SJR (ENHANCEMENT)
8001	ICE, ELDI FISH FARMS (AQC BROODSTOCK)	1988	156000	EGGS	ME, MPL/BINGHAM HATCHERY	P1989			(AQUACULTURE)
8012	ICE, ELDI FISH FARMS	1988	500000	EGGS	ME, MPL/BINGHAM HATCHERY	1989	3000	SMOLTS	ALLEN IS (AQUACULTURE)
8012						1989	100000	SMOLTS	SWANS IS (AQUACULTURE)
8012						1989	80000	SMOLTS	LUBEC (AQUACULTURE)
8013	ICE, ISNO SEA CAGES (AQC BROODSTOCK)	1988	280000	EGGS	ME, MPL/BINGHAM HATCHERY	1989	20000	SMOLTS	TREAT IS (AQUACULTURE)
8013						1989	15000	SMOLTS	MATHEWS IS (AQUACULTURE)
8013						1989	60000	SMOLTS	SWANS IS (AQUACULTURE)
8013						1989	80000	SMOLTS	LUBEC (AQUACULTURE)
8014	FIN, OY BALTIC (MOORUM)	1988	1000000	EGGS	ME, MPL, BINGHAM HATCHERY	1989	20000	SMOLTS	TREAT IS (AQUACULTURE)
8014						1989	100000	SMOLTS	SWANS IS (AQUACULTURE)
						1989	80000	SMOLTS	COOPER IS (AQUACULTURE)

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1991

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)	TRANSFERS YEAR	NUMBER	STAGE	SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	FINAL DISPOSITION LOCATION (PURPOSE)
SALMO SALAR (ATLANTIC SALMON) - CONTINUED									
8014						1989	30000	SMOLTS	TREAT IS (AQUACULTURE)
8004	SCO, LANDCATCH (AQC/2 NORWAY STRAINS)	1988	1000000	EGGS	ME, ASI/OQUOSSOC HATCHERY	P1989			(AQUACULTURE)
8004	SCO, LANDCATCH (AQC/2 NORWAY STRAINS)	1988	1000000	EGGS	ME, ASI/OQUOSSOC HATCHERY	P1989			(AQUACULTURE)
8004	SCO, LANDCATCH (DOMESTIC)	1988	1500000	EGGS	ME, ASI/OQUOSSOC HATCHERY	1989	20000	SMOLTS	GR WASS IS (AQUACULTURE)
8004						1989	80000	SMOLTS	TREAT IS (AQUACULTURE)
8004						1989	80000	SMOLTS	ROGERS IS (AQUACULTURE)
8004						1989	5000	SMOLTS	MATHEWS IS (AQUACULTURE)
8004						1989	35000	SMOLTS	TREAT IS (AQUACULTURE)
8004						1989	225000	SMOLTS	CROSS IS (AQUACULTURE)
8017	NB, JAIL IS SALMON (FUNDY/ST JOHN)	1988	1600000	EGGS	NB, SEA FARMS/DIG & SPRING H	1988	200000	FRY	(SEE NEXT LINE)
8017					NH, BRISTOL HATCHERY	1989	90000	SMOLTS	CUTLER HARB (AQUACULTURE)
8017						1989	60000	SMOLTS	GR WASS IS (AQUACULTURE)
8015		1988	1500000	EGGS	NB, SEA FARMS/DIG & SPRING H	1988	200000	FRY	(SEE NEXT LINE)
8015					NH, BRISTOL HATCHERY	1989	10000	SMOLTS	GROVE PT (AQUACULTURE)
8016		1988	1000000	EGGS	NB, SEA FARMS/DIGDEQUASH H	1989	100000	SMOLTS	LUBEC (AQUACULTURE)
8016						1989	20000	SMOLTS	ROGERS IS (AQUACULTURE)
8016						1989	20000	SMOLTS	GROVE PT (AQUACULTURE)
8005	NB, DIGDEQUASH H (AQC/ST JOHN)	1988	30000	SMOLTS	NB, J STEVENS/LK UTOPIA H				LUBEC SEA CAGES (AQC)
8006	NB, DIGDEQUASH H (AQC/ST JOHN)	1988	99300	SMOLTS	ME, SEA FARMS				LUBEC SEA CAGES (AQC)
8007	NB, DIGDEQUASH H (AQC/ST JOHN)	1988	350000	UY PARR	ME, SALEN INC				UPPER SJR (ENHANCEMENT)
8008	NB, FLORENCEVILLE H (SJR/MINTO & ASF)	1988	20000	UY PARR	ME, SALEN INC				UPPER SJR (ENHANCEMENT)
8009	NB, FLORENCEVILLE H (SJR & MINTO)	1988	27000	FRY	ME, SALEN INC				UPPER SJR (ENHANCEMENT)
8010	NB, MACTAQUAC FCS (ST JOHN RIVER)	1988	100	ADULTS	ME, ASRSC				AROOSTOOK R (RESTORATION)
8011	NB, MACTAQUAC FCS (ST JOHN RIVER)	1988	100000	EGGS	ME, ASRSC/GREEN LK H (HATCHING)	1988		FRY	AROOSTOOK R (RESTORATION)
9001	NB, FLORENCEVILLE H (DOMESTIC/SJR)	1989	30000	PARR	ME, SALEN INC				SJR (ENHANCEMENT)
9002	NB, FLORENCEVILLE H (DOMESTIC/SJR)	1989	80000	FRY	ME, SALEN INC				SJR (ENHANCEMENT)
9005	NB, ST JOHN FCS (ST JOHN)	1989	10000	SMOLTS	ME, DFO				AROOSTOOK R (SURVIVAL TEST)
9007	NB, SEA FARMS CANADA (ATLANTIC/SJR)	1989	627000	EGGS	ME, OPI/GARDNER LAKE				(NOT SPECIFIED)
9008	NB, GRANGER COVE SALMON (ATLANTIC/SJR)	1989	225000	EGGS	ME, OPI/GARDNER LAKE				(NOT SPECIFIED)
9009	NB, GRANGER COVE SALMON (ATLANTIC/SJR)	1989	250000	EGGS	ME, ASI/QUOSSOC HATCHERY				(NOT SPECIFIED)
9010	NB, KELLY COVE SALMON (ATLANTIC/SJR)	1989	550000	EGGS	ME, MPL/BINGHAM HATCHERY				(NOT SPECIFIED)
9011	NB, AQUA VENTURES (ATLANTIC/SJR)	1989	550000	EGGS	ME, MPL/BINGHAM HATCHERY				(NOT SPECIFIED)
9012	NB, KELLY COVE SALMON (ATLANTIC/SJ)	1989	187500	EGGS	ME, NEFFE, KENNEBEC AQUACULTURE				(NOT SPECIFIED)
9013	NB, AQUA VENTURES (ATLANTIC/SJR)	1989	187500	EGGS	ME, NEFFE, KENNEBEC AQUACULTURE				(NOT SPECIFIED)
9014	NB, AQUA VENTURES (ATLANTIC/SJR)	1989	250000	EGGS	ME, NEFFE, KENNEBEC AQUACULTURE				(NOT SPECIFIED)
9015	NB, KELLY COVE SALMON (ATLANTIC/SJ)	1989	250000	EGGS	ME, NEFFE, KENNEBEC AQUACULTURE				(NOT SPECIFIED)
9016	NB, AQUA VENTURES (ATLANTIC/SJR)	1989	125000	EGGS	ME, ASI/OQUOSSOC HATCHERY				(NOT SPECIFIED)
9017	NB, KELLY COVE SALMON (ATLANTIC/SJ)	1989	125000	EGGS	ME, ASI/OQUOSSOC HATCHERY				(NOT SPECIFIED)
9018	NB, CONNORS BROS (ATLANTIC/SJ)	*1989	200000	EGGS	ME, PICARD FARMS/FRENCHVILLE	1991	80000	SMOLT	PRINCE COVE (CAGE CULTURE)
0001	NB, SAINT JOHN FCS (SJR WILD)	1990	40000	FRY	ME, ASRSC (PUBLIC STOCKING)				WASHBURN, AROOSTOOK RIVER
0002	NB, SAINT JOHN FCS (SJR WILD)	1990	7569	SMOLTS	NB, DFO (PUBLIC STOCKING/RESEARCH)				PRESQUE ISLE, AROOSTOOK R

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1991

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)	TRANSFERS YEAR	NUMBER	STAGE	SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	FINAL DISPOSITION LOCATION (PURPOSE)
SALMO SALAR (ATLANTIC SALMON) - CONTINUED									
0003	NB, SAINT JOHN FCS (SJR WILD)	1990	6164	SMOLTS	NB, DFO (PUBLIC STOCKING/RESEARCH)				VAN BRUEN, SAINT JOHN RIVER
0004	SCO, LANDCATCH (AQUACULTURE/DOMESTIC)	*1990	1216804	EGGS	ME, ASI/OQUOSSOC HATCHERY	1991	100000	SMOLT	EASTPORT (CAGE CULTURE)
0004						1991	750000	SMOLT	CROSS ISLAND (CAGE CULTURE)
0005	NB, AQUA VENTURES (ATLANTIC/SJR)	1990	299830	EGGS	ME, KENNEBEC AQUACULTURE/EMBDEN				
0006	NB, KELLY COVE SALMON (ATLANTIC/SJR)	1990	140500	EGGS	ME, PENOBSCOT SALMON COMPANY INC	1990	5000	SMOLT	FRENCHMANS BAY (CAGE CULTURE)
	SEE 0005 & 0006 COMBINED	1990			AQUA VENTURE/KELLY COVE	1990	370000	EGGS	KENNEBEC AQUACULTURE EMBDEN
0006						1990	88000	YEAR	PENOBSCOT (FRANKLIN H)
0006						1991	30000	SMOLT	FRENCHMANS BAY (CAGE CULTURE)
0007	NB, GRANGER COVE SALMON (ATL/SJR)	1990	178640	EGGS	ME, ASI/OQUOSSOC HATCHERY				
0008	NB, AQUA VENTURES (ATLANTIC/SJR)	1990	230782	EGGS	ME, ASI/OQUOSSOC HATCHERY				
0009	NB, KELLY COVE SALMON (ATLANTIC/SJR)	*1990	274890	EGGS	ME, MPL/BINGHAM HATCHERY	1991	164936	SMOLT	SWANS ISLAND (CAGE CULTURE)
1001	NB, DIGDEQUASH HAT (ATL OCEAN ST JOHN)	U/K	U/K	U/K	U/K	1991	122000	SMOLT	LUBEC (CAGE CULTURE)
1005	NB, GRANGER COVE SALMON (DOMESTIC)	1991	450000	EGGS	ME, RANGLEY HATCHERY	P			
1006	NB, AQUA VENTURES (ATLANTIC ST JOHN)	1991	1195789	EGGS	ME, KENNEBEC AQUACULTURE/EMBDEN	P			
1007	NB, AQUA VENTURES (ATLANTIC ST JOHN)	1991	150000	EGGS	ME, PENOBSCOT SALMON FRANKLIN	P			
1008	NB, AQUA VENTURES (ATLANTIC ST JOHN)	1991	200000	EGGS	ME, ASI/RANGELEY HAT	P			
1013	NB, SEA FARMS FRYE ISLAND (ATL STJ)	1991	450000	EGGS	ME, ASI/RANGELEY HAT	P			
1014	NB, AQUA VENTURES (ATLANTIC ST JOHN)	1991	300000	EGGS	ME, ASI/RANGELEY HATCHERY	P			
1015	NB, AQUA VENTURES (ATLANTIC ST JOHN)	1991	576163	EGGS	ME, KENNEBEC AQUACULTURE/EMBDEN	P			
1016	NB, GRANGER COVE SALMON (ATL ST JOHN)	1991	170000	EGGS	ME, PENOBSCOT SALMON FRANKLIN	P			
1017	NB, GRANGER COVE SALMON (ATL ST JOHN)	1991	300000	EGGS	ME, PICARD HATCHERY FRENCHVILLE	P			
1018	NB, GRANGER COVE SALMON (ATL ST JOHN)	1991	315000	EGGS	ME, ASI/RANGELEY HATCHERY	P			
1019	NB, KELLY COVE SALMON (ATL ST JOHN)	1991	420000	EGGS	ME, MARICULTURE PRO BINGHAM H	P			
SALVELINUS ALPINUS (ARCTIC CHAR)									
9006	NB, HML (HML/FRASER R, LABRADOR)	1989	20000	EGGS	ME, MPL/BINGHAM HATCHERY	P1990			(NOT SPECIFIED)
SALVELINUS FONTINALIS (BROOK TROUT)									
0010	CO, 4 SEASONS TF (WILDCAT RESERVOIR)	1990	20000	EGGS	ME, PIERCE ASSOCIATES/WEST BUXTON				
0011	UT, EGAN HATCHERY (EGAN/H/OWHI)	1990	145327	EGGS	ME, MDIFW/COBB STATE HATCHERY	1990	112019	FING	VARIOUS (PUBLIC STOCKING)

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1991

MASSACHUSETTS

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)	TRANSFERS YEAR	NUMBER	STAGE	SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	FINAL DISPOSITION LOCATION (PURPOSE)
ONCORHYNCHUS KISUTCH (COHO SALMON)									
6003	OR, ORE AQUA INC (UNKNOWN)	1986	25000	EGGS	MA, SP INC/SALEM LABORATORY				SALEM LAB TANKS (AQC)
6001	MA, SULLIVAN & SANDWICH H (NORTH R/WA)					1986	24942	SMOLT	NORTH RIVER (RESEARCH)
7001	OR, ORE AQUA INC (UNKNOWN)	1987	35000	EGGS	MA, R T CAPELESS				HINSDALE TANKS (AQC)
8002	MI, PLATTE RIVER HATCHERY				MA, SULLIVAN HATCHERY	1988	30000	JUV	NORTH RIVER (RESEARCH)
8001	MA, (NORTH RIVER)				MA, SULLIVAN HATCHERY	1988	21000	JUV	NORTH RIVER (RESEARCH)
9001	MI, PLATTE RIVER HATCHERY	*			MA, SULLIVAN HATCHERY	1989	50000		NORTH RIVER (RESEARCH)
9002	NY, SALMON RIVER HATCHERY	*			MA, SULLIVAN HATCHERY	1989	50000		NORTH RIVER (RESEARCH)
1004	NY, AQUA ARBOR (HINCHINBROOKE)	1991	10000	EGGS	MA, MDFW/BANCROFT MILL FARM				RESEARCH/FOOD PRO
ONCORHYNCHUS MYKISS (RAINBOW TROUT)									
6004	WA, TROUT LODGE (UNKNOWN)	1986	50000	EGGS	MA, MOHAWK TROUT HATCHERY				SUTHERLAND PONDS (AQC)
9005	WA, TROUT LODGE (DOMESTIC)	1989	550000	EGGS	MA, MCLAUGHLIN HATCHERY	1990	100000	FRY	SEE NEXT LINE
9005					SANDWICH HATCHERY	*1991		1+	(PUBLIC FISHING)
9005					MA, MCLAUGHLIN HATCHERY	1990	75000	FRY	SEE NEXT LINE
9005					SUNDERLAND HATCHERY	*1991		1+	(PUBLIC FISHING)
9005					MA, MCLAUGHLIN HATCHERY	1990	75000	FRY	SEE NEXT LINE
9006	ID, BLACK CANYON TF (DOMESTIC)	1989	30000	EGGS	MONTAGUE HATCHERY	*1991		1+	(PUBLIC FISHING)
0001	ONT, AQUAFARMS CANADA (DOMESTIC)	1990	20000	EGGS	MA, MCLAUGHLIN HATCHERY	*1991		1+	(PUBLIC FISHING)
0002	UT, TROPHY FISH RANCH INC (DOMESTIC)	1990	500000	EGGS	MA, D J ADAMS HATCHERY				(PRIVATE AQUACULTURE)
0002					MA, MDFW/MCLAUGHLIN HATCHERY	1991	80000	FRY	SEE NEXT 2 LINES
0002					SUNDERLAND HATCHERY	*1991			VARIOUS (PUBLIC FISHING)
0002					SUNDERLAND HATCHERY	*1992			VARIOUS (PUBLIC FISHING)
0002					MA, MDFW/MCLAUGHLIN HATCHERY	1991	80000	FRY	SEE NEXT 2 LINES
0002					MONTAGUE HATCHERY	*1991			VARIOUS (PUBLIC FISHING)
0003	UT, TROPHY FISH RANCH INC (DOMESTIC)	1990	100000	G EGGS	MONTAGUE HATCHERY	*1992			VARIOUS (PUBLIC FISHING)
0003					MA, MDFW/SANDWICH HATCHERY	*1991			VARIOUS (PUBLIC FISHING)
0004	ONT, AQUAFARMS CANADA (DOMESTIC)	1990	7000	FING	MA, MDFW/SANDWICH HATCHERY	*1992			VARIOUS (PUBLIC FISHING)
0005	ONT, RAINBOW SPRINGS H (DOMESTIC)	1990	60000	E EGGS	MA, MDFW/PLYMOUTH ROCK TROUT CO.				UNKNOWN
0006	ONT, WILDCAT TROUT FARM (DOMESTIC)	1990	100000	E EGGS	MA, MDFW/PLYMOUTH ROCK TROUT CO.				UNKNOWN
1001	UT, TROPHY FISH RANCH INC (DOMESTIC)	1991	600000	FRY	MA, MDFW/PLYMOUTH ROCK TROUT CO.				UNKNOWN
1001					MA, MDFW/SANDWICH STATE HATCHERY	P1992	1000000	FRY	(PUBLIC FISHING)
1001					MA, MDFW/SUDERLAND STATE HATCH	P1992	80000	FRY	(PUBLIC FISHING)
1005	MT, SPRING CREEK HAT (DOMESTIC)	1991	10000	FRY	MA, MDFW/MONTAGUE STATE HATCH	P1992	90000	FRY	(PUBLIC FISHING)
					MA, MDFW/GAUTHIER TROUT FARM				PRIVATE SECTOR DOMAIN
ONCORHYNCHUS MYKISS KAMLOOPS (KAMLOOPS TROUT)									
6002	WA, TROUT LODGE (UNKNOWN)	1986	10000	EGGS	MA, CANDEES TROUT HATCHERY				EGERMONT PONDS (AQC)

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1991

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)				TRANSFERS SPONSOR/FACILITY (PURPOSE)				FINAL DISPOSITION LOCATION (PURPOSE)
		YEAR	NUMBER	STAGE		YEAR	NUMBER	STAGE	
SALMO SALAR (ATLANTIC SALMON)									
8003	ME, (UNION RIVER)				MA, MDFW, REED HATCHERY	1988	6033	FRY	WESTFIELD RIVER
8003						1988	27467	FRY	MANHAN RIVER
8003						1988	14969	FRY	BEAR RIVER
8003						1988	23430	FRY	COLD RIVER
8003						1988	12000	FRY	SOUTH RIVER
8004	ME, (UNION RIVER)				MA, MDFW/REED HATCHERY	1988	22600	SMOLTS	DEERFIELD RIVER
8004						1988	22800	SMOLTS	MILLERS RIVER
8005	ME, (UNION RIVER)				MA, MDFW/REED HATCHERY	1988	2700	PARR	MILLERS RIVER
8005						1988	2300	PARR	DEERFIELD RIVER
9003	CT, (CONNECTICUT RIVER)				MA, MDFW/REED HATCHERY	1989	120000	FRY	DEERFIELD RIVER
9004	CT, (CONNECTICUT RIVER)				MA, MDFW/REED HATCHERY	1989	20000	SMOLTS	DEERFIELD RIVER
9004						1989	20000	SMOLTS	MILLERS RIVER
SALMO TRUTTA (BROWN TROUT)									
1002	MT, SPRING CREEK HAT (DOMESTIC)	1991	100000	EGGS	MA, MDFW/TROUT FARM WAREHAM				PRIVATE SECTOR DOMAIN
SALVELINUS FONTINALIS (BROOK TROUT)									
1003	MT, SPRING CREEK HAT (DOMESTIC)	1991	100000	EGGS	MA, MDFW/TROUT FARM WAREHAM				PRIVATE SECTOR DOMAIN
1006	NB, GREENACES TROUT H (PIS ALLEGHANYS)	U/K	50000	EGGS	MA, MDFW/RED WING MEADOW FARM				PRIVATE SECTOR DOMAIN

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1991

NEW BRUNSWICK

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)				TRANSFERS SPONSOR/FACILITY (PURPOSE)				FINAL DISPOSITION LOCATION (PURPOSE)
		YEAR	NUMBER	STAGE		YEAR	NUMBER	STAGE	
ONCORHYNCHUS MYKISS (RAINBOW TROUT)									
7007	ONT, RAINBOW SPRINGS HATCHERY	1987	2000	EGGS	NB, ST ANDREWS BIOLOGICAL STATION				
7015	QUE, PISCICULTURE ALLEGHANYS	1987	3000	FING	NB, D WOLVERTON				CENTREVILLE (AQUACULTURE)
7016	ONT, RAINBOW SPRINGS HATCHERY	1987	4000	FING	NB, A PHILLIPS				MONCTON (AQUACULTURE)
7010	PEI, INTEGRATED AQUATICS	1987	4000	FING	NB, DON CHAPMAN				CAMPOBELLO (AQUACULTURE)
7008	WA, BEITEYS RESORT	1987	75000	EGGS	NB, PURTILL HATCHERY				SUSSEX (AQUACULTURE)
7002	ONT, AQUAFARMS CANADA LTD	1987	15000	FING	NB, FUNDY MARINE SURVEYORS				ST JOHN (AQUACULTURE)
7014	QUE, PISCICULTURE ALLEGHANYS	1987	1300	FING	NB, G CORMIER				GRAND FALLS (AQUACULTURE)
7013	PEI, INTEGRATED AQUATICS	1987	3600	FING	NB, MERI-MER OCEAN PRODUCTS				WELSHPOOL (AQUACULTURE)
7012	QUE, PISCICULTURE ALLEGHANYS	1987	6000	FING	NB, ATLANTIS SEA FARMS				CLIFTON ROYAL (AQUACULTURE)
7011	QUE, PISCICULTURE ALLEGHANYS	1987	200000	EGGS	NB, ATLANTIS SEA FARMS				CLIFTON ROYAL (AQUACULTURE)
7003	ONT, RAINBOW SPRINGS HATCHERY	1987	50000	EGGS	NB, PURTILL HATCHERY				SUSSEX (AQUACULTURE)
7017	ONT, AQUAFARMS CANADA LTD	1987	100000	EGGS	NB, ALVIN CRAFT/HATFIELD POINT				HATFIELD PT (AQUACULTURE)
7005	ONT, RAINBOW SPRINGS HATCHERY	1987	40000	EGGS	NB, OAK BAY HATCHERY				ST STEPHEN (AQUACULTURE)
7009	PEI, INTEGRATED AQUATICS	1987	3000	FING	NB, LLOYD COOK				ST GEORGE (AQUACULTURE)
7001	ONT, RAINBOW SPRINGS HATCHERY	1987	177000	EGGS	NB, ATLANTIC SEA FARM				CLIFTON ROYAL (AQC)
7018	ONT, AQUAFARMS CANADA LTD	1987	20000	EGGS	NB, MEADOW LAKE FARMS				ST JOHN (AQUACULTURE)
7004	ONT, RAINBOW SPRINGS HATCHERY	1987	50000	EGGS	NB, ATLANTIC SMOLTS LTD				MINTO (AQUACULTURE)
7006	ONT, RAINBOW SPRINGS HATCHERY	1987	20000	EGGS	NB, SISCOR CORPORATION				MONCTON (AQUACULTURE)
8024	ONT, RAINBOW SPRINGS HATCHERY	1988	10000	FING	NB, WILLIAM KNOW (REARING)				ST JOHN (AQUACULTURE)
8023	QUE, PISCICULTURE ALLEGHANYS	1988	800	FING	NB, GILLES CORMIER (REARING)				GRAND FALLS (AQUACULTURE)
8022	PEI, INTEGRATED AQUATICS	1988	4300	FING	NB, L COOK, ST GEORGE (REARING)				BOF CAGES (AQUACULTURE)
8021	QUE, PISCICULTURE ALLEGHANYS	1988	100000	EGGS	NB, GREEN ACRES TF (REARING)				MONCTON (AQUACULTURE)
8020	WA, BEITEYS RESORT	1988	125000	EGGS	NB, EDWARD EUSTACE (REARING)				SUSSEX (AQUACULTURE)
9004	PEI, BROOKVALLEY MARINE	1989	4350	EGGS	NB, MASCARINE MARICULTURE				MASCARINE (AQC)?
9005	ONT, RAINBOW SPRINGS HATCHERY	1989	100000	EGGS	NB, MEDARD CORMIER, MONCTON				
9006	PEI, GLYNDE RIVER AQUACULTURE	1989	20000	EGGS	NB, B GATES/BELLEISLE CREEK				
9013	ONT, AQUAFARMS CANADA LTD	1989	75000	EGGS	NB, ALVIN CRAFT/HATFIELD POINT				
0001	PEI, INTEGRATED AQUATICS	1990	5000	EGGS	NB, NB COMMUNITY COLLEGE/ST. ANDREWS				
0002	PEI, BROOKVALLEY MARINE	1990	1900	FING	NB, M. LEGERE/FORTUNE				
0003	ONT, RAINBOW SPRINGS HATCHERY	1990	50000	EGGS	NB, MEDARD CORMIER/MONCTON				
0004	QUE, PISCICULTURE ALLEGHANYS	1990	600	FING	NB, MICHEL BIRON/FREDERICTON				
0005	ONT, RAINBOW SPRINGS HATCHERY	1990	2000	FING	NB, POLLUTECH ENVIRONMENT/BATHURST				
1013	ONT, RAINBOW SPRINGS HATCHERY	1991	1000	FING	NB, POLLUTECH/CARAQUET				
1014	QUE, PISCICULTURE ALLEGHANYS	1991	20000	EGGS	NB, GREENACRES FARM/GRAND DIGUE				
1015	QUE, PISCICULTURE ALLEGHANYS	1991	20000	FING	NB, MEDARD CORMIER/MONCTON				
1016	PEI, BROOK VALLEY MARINE	1991	10000	FING	NB, LEGERE FARM/ROBICHAUD				
1017	PEI, DOVER HAT, MURRAY RIVER	1991	500	FING	NB, WOLVERTON HAT/CENTREVILLE				
1018	PEI, BROOK VALLEY MARINE	1991	6000	FING	NB, LEGERE FARM/ROBICHAUD				
1019	ONT, RAINBOW SPRINGS H, THAMESFORD	1991	1000	FING	NB, DEWINK IND/CARAQUET				
1020	PEI, BROOK VALLEY MARINE	1991	1800	FING	NB, LEGERE FARMS/ROBICHAUD				
1021	QUE, PISCICULTURE ALLEGHANYS	1991	40000	EGGS	NB, ALVIN CRAFT/HATFIELD PT				
1022	QUE, PISCICULTURE ALLEGHANYS	1991	80000	EGGS	NB, ALVIN CRAFT/HATFIELD PT				

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FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)	TRANSFERS YEAR	NUMBER	STAGE	SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	FINAL DISPOSITION LOCATION (PURPOSE)
ONCORHYNCHUS MYKISS (RAINBOW TROUT) - CONTINUED									
1023	QUE, PISCICULTURE ALLEGHANYS	1991	200000	EGGS	NB, CLAUDE NADEAU/EDMUNSTON				
1026	QUE, PISCICULTURE ALLEGHANYS	1991	20000	EGGS	NB, GREENACRES H/GRAND DIGUE				
SALMO SALAR (LANDLOCKED ATLANTIC SALMON)									
8019	ME, GRAND LK STREAM H (WEST GRAND LK)	1988	35000	EGGS	NB, DFO/ST JOHN FCS (REARING)	P			(ENHANCEMENT)
9001	ME, GRAND LK STREAM HATCHERY	1989	35000	EGGS	NB, DFO/ST JOHN FCS				
SALMO TRUTTA (BROWN TROUT)									
7022	NB, FLOWERS COVE H (LOCH LOMOND)	1987	10000	JUV	NB, NBDNRE				EAST MUSQUASH R
8005	NB, FLOWERS COVE H (LOCH LOMOND)	P1988	10000	JUV	NB, NBDNRE				EAST MUSQUASH R
SALVELINUS ALPINUS (ARCTIC CHAR)									
8006	MAN, ROCKWOOD H (FRASER R, LABRADOR)	1988	3000	EGGS	NB, BUCTOUCHE INDIAN BAND				BUCTOUCHE (AQUACULTURE)
	NB, FLOWERS COVE H (WALTON LAKE)	*1989	1000	JUV					2ND KEDRON LK
9002	MAN, ROCKWOOD HATCHERY	1989	5000	EGGS	NB, GREEN ACRES TROUT FARM/MONCTON				BUCTOUCHE (AQC) ?
9003	MAN, ROCKWOOD HATCHERY	1989	5000	EGGS	NB, BUCTOUCHE INDIAN BAND				
9012	MAN, ROCKWOOD HATCHERY	1989	3000	EGGS	NB, SEA FARMS CANADA/SUSSEX				
0006	PEI, BROOKVALLEY MARINE	1990	40000	EGGS	NB, GREEN ACRES TROUT FARM/MONCTON				
1024	PEI, INTEGRATED AQUA	1991	4500	FRY	NB, HUNTSMAN MARINE LAB/ST ANDREWS				
1025	PEI, INTEGRATED AQUA	1991	10000	FING	NB, ROGER GIONET/SHIPPAGAN				
SALVELINUS FONTINALIS (BROOK TROUT)									
7020	QUE, PISCICULTURE ALLEGHANYS	1987	100000	EGGS	NB, ATLANTIS SEA FARMS				CLIFTON ROYAL (AQUACULTURE)
7019	QUE, PISCICULTURE ALLEGHANYS	1987	180000	EGGS	NB, DOUGLAS DAIGLE, RICHIBUCTO				RICHIBUCTO (AQUACULTURE)
7021	QUE, PISCICULTURE ALLEGHANYS	1987	130000	FING	NB, PIERRE MORIN				GRAND FALLS (AQUACULTURE)
8018	QUE, PISCICULTURE ALLEGHANYS	1988	30000	FING	NB, PIERRE MORIN (REARING)				GRAND FALLS (AQUACULTURE)
8016	QUE, PISCICULTURE ALLEGHANYS	1988	4000	FING	NB, GILLES CORMIER (REARING)				GRAND FALLS (AQUACULTURE)
8015	ME, PHILLIPS HATCHERY	1988	150000	EGGS	NB, FLOWERS COVE H (REARING)				
8014	QUE, PISCICULTURE ALLEGHANYS	1988	100000	EGGS	NB, RONALD NOWLAN (REARING)				POKEMOUCHE (AQUACULTURE)
8013	QUE, PISCICULTURE ALLEGHANYS	1988	20000	EGGS	NB, JAMES McCRAE (REARING)				SAINT JOHN (AQUACULTURE)
8012	QUE, PISCICULTURE ALLEGHANYS	1988	75000	EGGS	NB, ALVIN CRAFT (REARING)				HATFIELD PT (AQUACULTURE)
8011	QUE, PISCICULTURE ALLEGHANYS	1988	300000	EGGS	NB, DOUGLAS DAIGLE (REARING)				RICHIBUCTO (AQUACULTURE)
8010	QUE, PISCICULTURE ALLEGHANYS	1988	75000	EGGS	NB, NOEL BOSSE (REARING)				EDMUNDSTON (AQUACULTURE)
8009	QUE, PISCICULTURE ALLEGHANYS	1988	200000	EGGS	NB, REGINALD BOSS (REARING)				EDMUNDSTON (AQUACULTURE)
8008	QUE, PISCICULTURE ALLEGHANYS	1988	200000	EGGS	NB, GREEN ACRES TF (REARING)				MONCTON (AQUACULTURE)
8007	QUE, PISCICULTURE ALLEGHANYS	1988	50000	EGGS	NB, WILLIAM KNOW (REARING)				ST JOHN (AQUACULTURE)
9007	ONT, WILDCAT TROUT FARM	1989	120000	EGGS	NB, D DAIGLE (REARING)				RICHIBUCTO (AQUACULTURE)
9008	PEI, BROOKVALLEY MARINE	1989	120	FISH	NB, ROBERT METHE (REARING)				SALISBURY (AQUACULTURE)

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1991

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)	TRANSFERS YEAR	NUMBER	STAGE	SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	FINAL DISPOSITION LOCATION (PURPOSE)
SALVELINUS FONTINALIS (BROOK TROUT) - CONTINUED									
9009	PEI, BROOKVALLEY MARINE	1989	25000	EGGS	NB, BILL KNOR/GAGETOWN				
9010	PEI, BROOKVALLEY MARINE	1989	5500	FISH	NB, BILL KNOR/GAGETOWN				
9011	PEI, BROOKVALLEY MARINE	1989	21000	EGGS	NB, L McCRAE/HATFIELD POINT				
0007	PEI, BROOKVALLEY MARINE	1990	20000	FING	NB, NBDNRE/MINTO				
0008	WA, BEITEYS RESORT	1990	60000	EGGS	NB, GREEN ACRES TF (REARING)				MONCTON (AQUACULTURE)
0009	WA, BEITEYS RESORT	1990	50000	EGGS	NB, ALVIN CRAFT (REARING)				HATFIELD PT (AQUACULTURE)
0010	WA, BEITEYS RESORT	1990	50000	EGGS	NB, GREEN ACRES TF (REARING)				MONCTON (AQUACULTURE)
0011	PEI, BROOKVALLEY MARINE	1990	6000	FING	NB, BILL KNORR/SAINT JOHN				
0012	QUE, PISCICULTURE ALLEGHANYS	1990	200000	EGGS	NB, GREEN ACRES TF (REARING)				MONCTON (AQUACULTURE)
0013	QUE, PISCICULTURE ALLEGHANYS	1990	300000	EGGS	NB, DOUGLAS DAIGLE (REARING)				RICHIBUCTO (AQUACULTURE)
0014	QUE, PISCICULTURE ALLEGHANYS	1990	275000	EGGS	NB, REGINALD BOSSE (REARING)				EDMONSTON (AQUACULTURE)
0015	QUE, PISCICULTURE ALLEGHANYS	1990	50000	EGGS	NB, ALVIN CRAFT (REARING)				HATFIELD PT (AQUACULTURE)
0016	PEI, BROOKVALLEY MARINE	1990	60000	EGGS	NB, LEGERE FISH FARM/CAPE PELE				
0017	QUE, PISCICULTURE ALLEGHANYS	1990	25000	EGGS	NB, MCCREA FARM LTD/HATFIELD POINT				
0018	QUE, PISCICULTURE ALLEGHANYS	1990	50000	FING	NB, MEDARD CORMIER/MONCTON				
0019	ME, PHILLIPS HATCHERY	1990	20000	EGGS	NB, NBDNRE/FLOWERS COVE (QUAR)				
1001	ME, PHILLIPS HATCHERY	1991	20000	EGGS	NB, NATURAL RESOURCES/FLOWERS COVE				
1002	QUE, PISCICULTURE ALLEGHANYS	1991	20000	FING	NB, RON NOWLAND ENT POKEMOUCHE				
1003	PEI, BROOK VALLEY MARINE, SOURIS	1991	20000	FING	NB, LEGERE FISH FARM/ ROBICHAUD				
1004	QUE, PISCICULTURE ALLEGHANYS	1991	50000	EGGS	NB, LEGERE FISH FARMS/ROBICHAUD				
1005	QUE, PISCICULTURE ALLEGHANYS	1991	150000	EGGS	NB, DAIGLES TROUT FARM/RICHIBUCTO				
1006	QUE, PISCICULTURE ALLEGHANYS	1991	150000	EGGS	NB, REGINALD BOSSE/EDMUNSTON				
1007	QUE, PISCICULTURE ALLEGHANYS	1991	25000	EGGS	NB, MCCREA FARMS/HATFIELD PT				
1008	QUE, PISCICULTURE ALLEGHANYS	1991	20000	EGGS	NB, ALVIN CRAFT/HATFIELD PT				
1009	PEI, BROOK VALLEY MARINE, SOURIS	1991	40000	EGGS	NB, LEGERE FISH FARMS/ROBICHAUD				
1010	PEI, BROOK VALLEY MARINE, SOURIS	1991	80000	EGGS	NB, DUCEY & SONS FISH F/HATFIELD PT				
1011	QUE, PISCICULTURE ALLEGHANYS	1991	50000	EGGS	NB, CLERENCE LEVESQUE/CHARLO				
1012	ME, PHILLIPS STATE HATCHERY	1991	250000	EGGS	NB, NBFWB/FLOWERS COVE QUARANTINE				
SALVELINUS FONTINALIS X SALVELINUS ALPINUS (CHARBROOK)									
8004	NB, FLOWERS COVE H (WALTON X PHILLIPS)	P1988	10000	JUV	NB, NBDNRE				MINE PONDS
SALVELINUS NAMAYCUSH X SALVELINUS FONTINALIS (SPLAKE)									
6001	NB, FLOWERS COVE H (CLEAR X PHILLIPS)	1986	100	YEAR	NB, NBDNRE				NORTH LAKE (EXP STOCKING)
6001		1986	550	YEAR					PEABODY LK (EXP STOCKING)
6001		1986	100	YEAR					BLIND LK (EXP STOCKING)
7023	NB, FLOWERS COVE H (CLEAR X PHILLIPS)	1987	2000	JUV	NB, NBDNRE				MULLIN STREAM L
7023		1987	500	JUV					BIG MEADOW POND
7023		1987	2000	JUV					NL RIVER LAKE
7023		1987	150	JUV					GRAND MANAN
7023		1987	175	JUV					HARRIS LAKE

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FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)	TRANSFERS YEAR	NUMBER	STAGE	SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	FINAL DISPOSITION LOCATION (PURPOSE)
SALVELINUS NAMAYCUSH X SALVELINUS FONTINALIS (SPLAKE) - CONTINUED									
7023		1987	700	JUV					GLENN SEVERN
8001	NB, FLOWERS COVE H (CLEAR X PHILLIPS)	P1988	5000	JUV	NB, NBDNRE				GRAND LAKE
8001		P1988	2000	JUV					MULLIN STREAM
8001		P1988	2000	JUV					NL RIVER LAKE
	NB, FLOWERS COVE H (CLEAR X PHILLIPS)	P1989	5000	JUV					LAKE UTOPIA
	NB, FLOWERS COVE H (CLEAR X PHILLIPS)	P1989	150	JUV					GOLDSMITHS LAKE
OSMERUS MORDAX (RAINBOW SMELT)									
6002	NB, (SUCKER BROOK, SKIFF LAKE)	1986	50000	E EGGS	NB, NBDNRE				UNIQUE L (LL SALMON FORAGE)

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1991

NEWFOUNDLAND

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)				TRANSFERS				FINAL DISPOSITION LOCATION (PURPOSE)
		YEAR	NUMBER	STAGE	SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	
ONCORHYNCHUS MYKISS (RAINBOW TROUT)									
6001	ONT, RAINBOW SPRINGS HATCHERY	1986	5000	5CM					HOPEALL CAGES (AQC)
	ONT, RINGWOOD HATCHERY ?	1986	6700	JUV					HOPEALL CAGES ? (AQC)
7002	ONT, RAINBOW SPRINGS H (UNKNOWN)	1987	4000	JUV	NFLD, EPS/NWAFC TANKS (BIOASSAY)	P			TO BE DESTROYED
7003	ONT, RAINBOW SPRINGS H (UNKNOWN)	1987	900	JUV	NFLD, MSRL TANKS (RESEARCH)	P			TO BE DESTROYED
7001	ONT, AQUAFARMS CANADA (UNKNOWN)	1987	300	JUV	NFLD, MSRL TANKS (RESEARCH)	P			TO BE INCINERATED
7004	ONT, RAINBOW SPRINGS H (UNKNOWN)	1987	10000	TR EGGS	NFLD, BAY D'ESPOIR HATCHERY	P			BAY D'ESPOIR (AQUACULTURE)
7007	ONT, RAINBOW SPRINGS H (UNKNOWN)	1987	300	JUV	NFLD, DFO/NWAFC TANKS (RESEARCH)				FISH DESTROYED
8013	ONT, RAINBOW SPRINGS H (HATCHERY)	1988	150	15CM	NFLD, MSRL/MEMORIAL U (RESEARCH)				ST JOHNS, STOCK DESTROYED
8012	ONT, RAINBOW SPRINGS H (HATCHERY)	1988	500	15CM	NFLD, NWAFC (RESEARCH)				ST JOHNS, STOCK DESTROYED
8010	ONT, RAINBOW SPRINGS H (HATCHERY)	1988	500	10CM	NFLD, DFO/NWAFC (RESEARCH)				ST JOHNS, STOCK DESTROYED
8009	ONT, RAINBOW SPRINGS H (HATCHERY)	1988	500	7CM	NFLD, DFO/NWAFC (RESEARCH)				ST JOHNS, STOCK DESTROYED
8015	ONT, RAINBOW SPRINGS H (HATCHERY)	1988	2000	FRY	NFLD, EPS/NWAFC (BIOMONITORING)				
8016	ONT, RAINBOW SPRINGS H (HATCHERY)	1988	2000	FRY	NFLD, EPS/NWAFC (BIOMONITORING)				ST JOHNS, STOCK DESTROYED
8008	ONT, RAINBOW SPRINGS H (HATCHERY)	1988	2000	FRY	NFLD, EPS/NWAFC (BIOMONITORING)				ST JOHNS, STOCK DESTROYED
8017	ONT, RAINBOW SPRINGS H (HATCHERY)	1988	30000	TR EGGS	NFLD, BAY D'ESPOIR HATCHERY				ST ALBANS, STOCK DESTROYED
8014	ONT, RAINBOW SPRINGS H (HATCHERY)	1988	125000	TR EGGS	NFLD, BAY D'ESPOIR HATCHERY	P1989			ROTI BAY CAGES (AQC)
8011	ONT, RAINBOW SPRINGS H (HATCHERY)	1988	10000	EGGS	NFLD, MARINE INSTITUTE				ST JOHNS, STOCK DESTROYED
8007	ONT,	1988	600	FING	NFLD, BAY D'ESPOIR HATCHERY				
8006	ONT,	1988	100000	EGGS	NFLD, BAY D'ESPOIR HATCHERY				
9011	ONT, RAINBOW SPRINGS H (EX H/DOMESTIC)	*1989	50	30-50G	NFLD, MINL/MINL TANKS (TEACHING)	P			TO BE DESTROYED
9009	ONT, RAINBOW SPRINGS H (EX H/DOMESTIC)	*1989	2000	0.5G	NFLD, DOE, NWAFC (BIOMONITORING)	P			TO BE DESTROYED
9008	ONT, RAINBOW SPRINGS H (EX H/DOMESTIC)	*1989	2000	0.5G	NFLD, DOE/NWAFC (BIOMONITORING)	P			TO BE DESTROYED
9007	ONT, RAINBOW SPRINGS H (EX H/DOMESTIC)	*1989	75000	TR EGGS	NFLD, BAY D'ESPOIR HATCHERY	P1990			ROTI BAY CAGES (AQC)
9006	ONT, RAINBOW SPRINGS H (EX H/DOMESTIC)	*1989	600	13CM	NFLD, OSL/BAY D'ESPOIR H (RESEARCH)	P			TO BE DESTROYED
9010	ONT, RAINBOW SPRINGS H (EX H/DOMESTIC)	*1990	5000	E EGGS	NFLD, MINL/MINL TANKS (TEACHING)	P			ST JOHNS, TO BE DESTROYED
0001	ONT, RAINBOW SPRINGS H (EX H/DOMESTIC)	1990	200	FISH	NFLD, DOE/NWAFC (EXPERIMENTAL)				STOCK DESTROYED
0002	ONT, RAINBOW SPRINGS H (EX H/DOMESTIC)	1990	60000	E EGGS	NFLD, BAY D'ESPOIR HATCHERY	P			SEA CAGES
0003	ONT, RAINBOW SPRINGS H (EX H/DOMESTIC)	1990	500	0.5-1 G	NFLD, LEDREW FUDGE (BIOASSAY)				STOCK DESTROYED
0005	ONT, RAINBOW SPRINGS H (EX H/DOMESTIC)	1990	2000	0.5 G	NFLD, ENV PROTECTION (BIOASSAY)				STOCK DESTROYED
0006	ONT, RAINBOW SPRINGS H (EX H/DOMESTIC)	1990	500	0.5-1 G	NFLD, LEM LAB INC (BIOASSAY)				STOCK DESTROYED
0007	ONT, RAINBOW SPRINGS H (EX H/DOMESTIC)	1990	500	10-15 CM	NFLD, NWAFC (INFECTION EXPERIMENTS)				STOCK DESTROYED
0008	ONT, RAINBOW SPRINGS H (EX H/DOMESTIC)	1990	20000	E EGGS	NFLD, BAY D'ESPOIR HATCHERY	P			SEA CAGES
0009	ONT, RAINBOW SPRINGS H (EX H/DOMESTIC)	1990	1500	0.5 G	NFLD, ENV PROTECTION (BIOASSAY)				STOCK DESTROYED
0011	ONT, RAINBOW SPRINGS H (EX H/DOMESTIC)	1990	1500	40 MM	NFLD, SMBDA/HOLYROOD POND				(AQUACULTURE)
0012	ONT, RAINBOW SPRINGS H (EX H/DOMESTIC)	1990	500	0.5-1 G	NFLD, LEM LAB INC (BIOASSAY)				STOCK DESTROYED
0013	ONT, RAINBOW SPRINGS H (EX H/DOMESTIC)	1990	500	10-15 CM	NFLD, NWAFC (IMMUNOLOGY)				STOCK DESTROYED
0015	ONT, RAINBOW SPRINGS H (EX H/DOMESTIC)	1990	500	1-2 G	NFLD, LEM LAB INC (BIOASSAY)				STOCK DESTROYED
0016	ONT, RAINBOW SPRINGS H (EX H/DOMESTIC)	1990	1000	0.5-1 G	NFLD, LEM LAB INC (BIOASSAY)				STOCK DESTROYED
0017	ONT, RAINBOW SPRINGS H (EX H/DOMESTIC)	1990	200	FISH	NFLD, MARINE INSTITUTE (EXP)				STOCK DESTROYED
0018	ONT, RAINBOW SPRINGS H (EX H/DOMESTIC)	1990	130000	E EGGS	NFLD, BAY D'ESPOIR HATCHERY	P			SEA CAGES
0019	ONT, RAINBOW SPRINGS H (EX H/DOMESTIC)	1990	1500	O.5 G	NFLD, ENV PROTECTION (BIOASSAY)				STOCK DESTROYED
0021	ONT, RAINBOW SPRINGS H (EX H/DOMESTIC)	*	?		PEI, BROOKVALLEY MARINE	1990	1000	1-1.5 G	SEE NEXT LINE
0021		*			NFLD, LEM LAB INC (BIOASSAY)				STOCK DESTROYED
0022	ONT, RAINBOW SPRINGS H (EX H/DOMESTIC)	1990	150	FISH	NFLD, MARINE INSTITUTE (EXP)				STOCK DESTROYED

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FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)				TRANSFERS				FINAL DISPOSITION LOCATION (PURPOSE)
		YEAR	NUMBER	STAGE	SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	
ONCORHYNCHUS MYKISS (RAINBOW TROUT) - CONTINUED									
1001	ONT, RAINBOW SPRINGS H (HATCHERY)	1991	150000	TR EGGS	NFLD, BAY D'ESPOIR HATCHERY	P1992			SEA CAGES
1002	ONT, RAINBOW SPRINGS H (DOMESTIC)	1991	2000	FISH	NFLD, MURRAY'S POND F&C CLUB				POND FOR ANGLING
1003	PEI, BROOK VALLEY MARINE FARM (DOMESTIC)	1991	3500	15 CM	NFLD, STEPHENVILLE IND DEV COMM				FISHOUT POND
1004	ONT, RAINBOW SPRINGS H (DOMESTIC)	1991	300000	TR EGGS	NFLD, BAY D'ESPOIR HATCHERY	P1992			SEA CAGES
SALMO SALAR (ATLANTIC SALMON)									
8001	NB, KELLY COVE SEA CAGES (FUNDY/SJR)	*1988	130000	EGGS	NB, BRIDEN/CHAMCOOK H (QUAR)	1989	130000	EGGS	SEE NEXT LINE
8001					NFLD, BAY D'ESPOIR H (QUARANTINE)				
9012	NB, KELLY COVE SEA CAGES (FUNDY/SJR)	1989	100000	EGGS	NB, CHAMCOOK HATCHERY (QUAR)	1989	100000	EGGS	SEE NEXT LINE
9012					NFLD, BAY D'ESPOIR H (QUARANTINE)				
1005	NB, AQUA VENTURES LTD (FUNDY)	1991	100000	EGGS	NFLD, BAY D'ESPOIR H (QUARANTINE)	P1992	75000	FISH	SEA CAGES
SALVELINUS ALPINUS (ARCTIC CHAR)									
	LAB, (FRASER RIVER)	1986	54500	EGGS	NFLD, MSRL				
7005	LAB, (FRASER RIVER)	1987	10000	EGGS	NFLD, MSRL (INCUBATION)				EGGS DESTROYED
7006	LAB, (FRASER RIVER)	1987	60000	EGGS	NFLD, BAY D'ESPOIR H (QUARANTINE)				EGGS DESTROYED
8005	MAN, DFO, WINNIPEG	1988	30000	EGGS	NFLD, AQUA BLUE FARMS/PORT REXTON				
8004	NB, HUNTSMAN MARINE LABORATORY	1988	30000	EGGS	NFLD, BAY D'ESPOIR HATCHERY				
8003	MAN, DFO, WINNIPEG	1988	10000	EGGS	NFLD, BAY D'ESPOIR HATCHERY				
8002	LAB, (IKINET BROOK)	1988	5000	EGGS	NFLD, BAY D'ESPOIR HATCHERY				
9001	PEI, INTEGRATED AQUATICS (FRASER R/DOM)	*1989	150	7-10 CM	NFLD, DFO/NWAFC (RESEARCH)	P			STOCK TO BE DESTROYED
9002	MAN, ROCKWOOD HATCHERY (FRASER R/DOM)	*1989	5000	EGGS	NFLD, BAY D'ESPOIR HATCHERY	P1990			ROTI BAY CAGES (AQC)
9003	NB, HUNTSMAN MARINE LAB (FRASER R/DOM)	*1989	30000	E EGGS	NFLD, BAY D'ESPOIR H (QUARANTINE)	P1990			ROTI BAY CAGES (AQC)
9004	MAN, ROCKWOOD HATCHERY (FRASER R/DOM)	*1989	3000	EGGS	NFLD, MARINE INSTITUTE (TEACHING)	P			STOCK TO BE DESTROYED
9005	MAN, ROCKWOOD HATCHERY (FRASER R/DOM)	*1989	5000	EGGS	NFLD, NORDCO AQUARIUM (EXP)	1989			ST JOHNS, STOCK DIED
0014	PEI, IAS (EX ST JOHN EX FRASER R/DOM)	1990	200	FING	NFLD, NWAFC (RESEARCH)	P			STOCK TO BE DESTROYED
1006	MAN, ROCKWOOD HATCHERY (FRASER R/DOM)	1991	10000	EGGS	NFLD, NEW TECH CHAR FARMS				BROODSTOCK DEVELOPMENT
1007	PEI, IAS (PURTILL/DOM)	1991	10000	12-15 CM	NFLD, VALLEY CHAR INC.				LAKE CAGES, GRAND LAKE
1008	PEI, BROOK VALLEY MARINE (FRASER R/DOM)	1991	31000	FISH	NFLD, GNPDC				INDUSTRY DEMONSTRATION
1009	MAN, WILDWOOD ENT LTD (DOMESTIC)	1991	10000	EGGS	NFLD, NEW TECH CHAR FARMS				BROODSTOCK DEVELOPMENT
1010	MAN, WILDWOOD TROUT F (NAUYUK L/DOM)	1991	10000	EGGS	NFLD, NEW TECH CHAR FARMS				BROODSTOCK DEVELOPMENT
1011	PEI, BROOKVALLEY MARINE (FRASER R/DOM)	1991	310000	EGGS	NFLD, NEW TECH CHAR FARMS				BROODSTOCK DEVELOPMENT
1012	PEI, BROOKVALLEY MARINE (FRASER R/DOM)	1991	40000	EGGS	NFLD, GNPDC				INDUSTRY DEMONSTRATION
1013	PEI, BROOKVALLEY MARINE (DOMESTIC)	1991	10000	FISH	NFLD, NEW TECH CHAR FARMS				BROODSTOCK DEVELOPMENT
1014	QUE, PISCICULTURE DES ALLEGHANYS	1991	40000	EGGS	NFLD, DFO/NEW TECH CHAR FARMS				RESEARCH/DEMON FISHOUT POND

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1991

NEW HAMPSHIRE

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)				TRANSFERS				FINAL DISPOSITION LOCATION (PURPOSE)
		YEAR	NUMBER	STAGE	SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	
ONCORHYNCHUS KISUTCH (COHO SALMON)									
	NH,	1986	30000	FRY					GREAT BAY TRIBUTARIES
6003	NH, MILFORD HATCHERY (LAMPREY RIVER)	1986	61745	PARR					LAMPREY R (SPORT FISHERY)
6002	NH, MILFORD HATCHERY (LAMPREY RIVER)	1986	130000	SMOLTS					LAMPREY R (SPORT FISHERY)
	NH,	1986	129665	SMOLTS					GREAT BAY ESTUARY
7003	NH, MILFORD HATCHERY (LAMPREY RIVER)				NH, TWIN MOUNTAIN HATCHERY ?	1987	151000	SMOLTS	LAMPREY RIVER (RESEARCH)
8004	NY, SALMON RIVER H (SALMON RIVER)				NH, TWIN MOUNTAIN HATCHERY	1988	99411	SMOLTS	LAMPREY R (RECREATION)
9005	MI, PLATTE RIVER HATCHERY (PLATTE)	1987	300000	E EGGS	NH, NHFG/TWIN MOUNTAIN HATCHERY	1989	200295	SMOLTS	LAMPREY R (RECREATION)
0001	MI, PLATTE RIVER HATCHERY (OREGON)	P1990	400000	SMOLTS					LAMPREY R (RECREATION)
ONCORHYNCHUS MYKISS (RAINBOW TROUT)									
	NY, (LAKE ONTARIO)	1986	47215	SMOLTS					GREAT BAY ESTUARY
6004	NY, SALMON RIVER H (SALMON RIVER)	1986	47000						LAMPREY R (RECREATION)
7004	NY, SALMON RIVER H (SALMON RIVER)	1987	37000						LAMPREY R (RECREATION)
ONCORHYNCHUS TSHAWYTSCHA (CHINOOK SALMON)									
8005	NY, SALMON RIVER H (SALMON RIVER)				NH, TWIN MOUNTAIN HATCHERY	1988	110918	AGE 1	LAMPREY R (RECREATION)
8003	NY, SALMON RIVER H (SALMON RIVER)				NH, TWIN MOUNTAIN HATCHERY	1988	431460	FRY	LAMPREY R (RECREATION)
9004	NY, SALMON RIVER H (SALMON RIVER)	1988	1100000	EGGS	NH, NHFG/MILFORD HATCHERY	1989	631000	SMOLTS	LAMPREY R (RECREATION)
0001	NY, SALMON RIVER H (SALMON RIVER)	1989	700000	EGGS	NH, NHFG/MILFORD HATCHERY	1990	427000	SMOLTS	LAMPREY & EXETER RIVERS
0002	NY, SALMON RIVER H (SALMON RIVER)	1990	779000	EGGS	NH, NHFG/MILFORD HATCHERY	1991	428198	SMOLTS	(RECREATIONAL FISHERY)
1001	NY, SALMON RIVER H (SALMON RIVER)	1991	510000	G EGGS	NH, NHFG/MILFORD HATCHERY	P1992		SMOLT	RECREATIONAL FISHERY
SALMO TRUTTA (BROWN TROUT)									
6001	NH, MILFORD HATCHERY (DOMESTIC)	1986	9850	SMOLTS	NH, NHFG				8 RIVERS (RESEARCH)
7001	NH, MILFORD HATCHERY (DOMESTIC)	P1987	9850	SMOLTS	NH, NHFG				8 RIVERS (RESEARCH)

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1991

NEW JERSEY

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)	TRANSFERS YEAR	NUMBER	STAGE	SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	FINAL DISPOSITION LOCATION (PURPOSE)
ONCORHYNCHUS MYKISS (RAINBOW TROUT)									
7001	NY, ALTMAR HATCHERY (SALMON R)	1987	53000	E EGGS	NJ, HAYFORD HATCHERY	1988?			LARGE LOSS, PREDATION
7001						1988	1128	SMOLTS	RARITAN RIVER (RESEARCH)
ONCORHYNCHUS TSHAWYTSCHA (CHINOOK SALMON)									
6001	NY, ALTMAR HATCHERY (SALMON R)	1986	70000	EGGS	NJ, NJDEP/HAYFORD H (EXP REARING)	1987	59705		RARITAN RIVER
7002	NY, ALTMAR HATCHERY (SALMON R)	1987	95000	E EGGS	NJ, NJDEP/HAYFORD H (EXP REARING)	1988	91170	SMOLTS	RARITAN RIVER

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1991

NEW YORK

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)				TRANSFERS				FINAL DISPOSITION LOCATION (PURPOSE)
		YEAR	NUMBER	STAGE	SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	
ONCORHYNCHUS KISUTCH (COHO SALMON)									
6004	NY, SALMON R H (LK ONTARIO/SALMON R)	1986	547000	JUV	NY, NYDEC				LK ONTARIO (ENHANCEMENT)
6008	NY, SALMON R H (LK ONTARIO/SALMON R)	1986	102000	YEAR	NY, NYDEC				LK ERIE (SPORT FISHING)
6011	NY, SALMON R H (LK ONTARIO/SALMON R)	1986	194000	YEAR	NY, NYDEC				LK ONTARIO (SPORT FISHING)
6011		1986	268000	FING					LK ONTARIO (SPORT FISHING)
7011	NY, SALMON R H (LK ONTARIO/SALMON R)	P1987	350000	YEAR	NY, NYDEC				LK ONTARIO (SPORT FISHING)
7009	NY, SALMON R H (LK ONTARIO/SALMON R)	P1987	100000	1+	NY, NYDEC				LK ONTARIO (SPORT FISHING)
7034	NY, 2 HATCHERIES (SALMON R)	1987	80000	YEAR	NY, NYDEC				LK ONTARIO (SPORT FISHING)
8015	NY, 2 HATCHERIES (SALMON R)	1988	299850	YEAR	NY, NYDEC				LK ONTARIO (SPORT FISHING)
8016	NY, 2 HATCHERIES (SALMON R)	1988	256500	FING	NY, NYDEC				LK ONTARIO (SPORT FISHING)
8028	NY, SALMON R H (LK ONTARIO/SALMON R)	1988	31600	16MO					CHAUTAUQUA CR, LK ERIE
8028		1988	32600	16MO					18 MILE CREEK, LK ERIE
8028		1988	14500	16MO					CANADAWAY CREEK, LK ERIE
8028		1988	90250	16MO					CATTARAUGUS CR, LK ERIE
8028		1988	40000	6MO					CATTARAUGUS CR, LK ERIE
8028		1988	40000	6MO					18 MILE CREEK, LK ERIE
8027	NY, CALEDONIA HATCHERY (SALMON R)	1988	37500	11MO	NY, NYDEC				CATTARAUGUS CR, LK ERIE
9003	NY, SALMON R H (LK ONTARIO/SALMON R)	1989	180000	F FING	NY, NYDEC				3 LK ERIE TRIBS (STOCKING)
9004	NY, SALMON R H (LK ONTARIO/SALMON R)	1988	175000	F FING	NY, NYDEC/CALEDONIA H	1989	147865	YEAR	3 LK ERIE TRIBS (STOCKING)
9013	NY, SALMON R H (LK ONTARIO/SALMON R)	1989	143040	YEAR					LAKE ONTARIO (STOCKING)
9013		1989	53400	F FING					LAKE ONTARIO (STOCKING)
9014	NY, CALEDONIA H (LK ONTARIO/SALMON R)	1989	54065	YEAR	NY, NYDEC				LAKE ONTARIO (STOCKING)
9014		1989	160000	F FING					LAKE ONTARIO (STOCKING)
0008	NY, SALMON R H (LK ONTARIO/LK ONTARIO)	1990	162500	F FING	NY, NYDEC, LAKE ERIE UNIT				LAKE ERIE (STOCKING)
0009	NY, SALMON R H (LK ONTARIO/SALMON R)	1990	144400	FING	NY, NYDEC				LAKE ONTARIO (STOCKING)
0010	NY, SALMON R H (LK ONTARIO/SALMON R)	1990	187200	F FING	NY, NYDEC				LAKE ONTARIO (STOCKING)
0011	NY, SALMON R H (LK ONTARIO/SALMON R)	1990	110000	YEAR	NY, NYDEC (PRODUCE SPAWNING RUN)				LAKE ONTARIO (STOCKING)
0012	NY, SALMON R H (LK ONTARIO/SALMON R)	P1991	90000	YEAR	NY, NYDEC (PRODUCE SPAWNING RUN)				LAKE ONTARIO (STOCKING)
0013	NY, SALMON R H (LK ONTARIO/SALMON R)	P1991	155000	FING	NY, NYDEC				LAKE ONTARIO (STOCKING)
1006	NY, SALMON R H (LK ONTARIO/SALMON R)	1991	161250	F FING	NY, NYDEC LAKE ERIE UNIT				PUBLIC STOCKING
1007	NY, SALMON R H (LK ONTARIO/SALMON R)	1991	131750	F FING	NY, NYDEC LAKE ONTARIO				PUBLIC FISHING
1008	NY, SALMON R H (LK ONTARIO/SALMON R)	1991	97000	YEAR	NY, NYDEC (PRODUCE SPAWNING RUN)				PUBLIC FISHING
1009	NY, SALMON R H (LK ONTARIO/SALMON R)	P1992	155000	S FING	NY, NYDEC (LAKE ONTARIO)				PUBLIC FISHING
1010	NY, SALMON R H (LK ONTARIO/SALMON R)	P1992	90000	YEAR	NY, NYDEC (PRODUCE SPAWNING RUN)				PUBLIC FISHING
ONCORHYNCHUS MYKISS (RAINBOW TROUT)									
6015	NY, CALEDONIA H (DOMESTIC)	1986	103000	JUV	NY, NYDEC				LK ONTARIO (SPORT FISHING)
6006	NY, SALMON RIVER H (SALMON R/WA SS)	1986	100000	YEAR					LK ERIE (SPORT FISHING)
6003	NY, SALMON RIVER H (SALMON R/WA SS)	1986	335000	1+					LK ONTARIO (SPORT FISHING)
6007	MI, IN (LK MICHIGAN/SKAMANIA SS)				NY, NYDEC/SALMON RIVER HATCHERY	1986	17950	YEAR	LK ERIE (SPORT FISHING)
7016	NY, SALMON RIVER H (STEELHEAD STRAIN)	P1987	412000	YEAR					
7003	NY, SALMON RIVER H (LK ONTARIO/WA SS)	1987	130000	JUV					4 LAKE ERIE TRIBUTARIES
7002	IN, (LK MICHIGAN/SKAMANIA SS)				NY, NYDEC, SALMON RIVER HATCHERY	1987	20000	YEAR	CHAUTAUQUA CREEK

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1991

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)				TRANSFERS				FINAL DISPOSITION LOCATION (PURPOSE)
		YEAR	NUMBER	STAGE	SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	
ONCORHYNCHUS MYKISS (RAINBOW TROUT) - CONTINUED									
7027	NY, SALMON RIVER H (DOMESTIC/WFC)	1987	23000	FING					NOT IDENTIFIED
7028	NY, SALMON R H (DOMESTIC/WYTHEVILLE)	1987	17200	FING					NOT IDENTIFIED
7029	NY, SALMON RIVER HATCHERY (DOMESTIC)	1987	90600	YEAR					NOT IDENTIFIED
7024	NY, SALMON R H (WA OR SKAMANIA SS)	1987	60000	FING					LK ONTARIO TRIBUTARIES
7025	NY, 3 HATCHERIES (FINGER LAKES SS)	1987	69350	FING					LK ONTARIO TRIBUTARIES
7026	NY, 3 HATCHERIES (WA OR SKAMANIA SS)	1987	443340	YEAR					LK ONTARIO TRIBUTARIES
	NY, RANDOLPH H (DOMESTIC/NASHUA)				NY, CALEDONIA HATCHERY	1988	5000	10MO	BUFFALO CREEK, LK ERIE
8027	NY, CALEDONIA H (DOMESTIC/NASHUA)	1988	7500	10MO					18 MILE CREEK
8027		1988	5000	10MO					CANADAWAY CREEK
8027		1988	5000	10MO					CATTARAUGUS CREEK
8027		1988	17800	14MO					EAGLE BAY, LK ERIE
8027		1988	11600	15MO					STURGEON POINT, LK ERIE
8026	NY, RANDOLPH H (DOMESTIC/NASHUA)	1988	5000	14MO					BUFFALO HARBOUR
8007	NY, CALEDONIA H (CALEDONIA/DOMESTIC)	1988	150500	FING					LK ONTARIO (ENHANCEMENT)
8008	NY, CALEDONIA H (CALEDONIA/DOMESTIC)	1988	77370	YEAR					LK ONTARIO (ENHANCEMENT)
8024	NY, SALMON RIVER H (SALMON R/WA SS)	1988	50000	6MO					SPOONER BROOK, LK ERIE
8024		1988	50000	6MO					CLEAR CREEK
8024		1988	18000	16MO					CHAUTAUQUA CREEK
8024		1988	37000	16M0					CATTARAUGUS CREEK
8024		1988	23700	16MO					18 MILE CREEK
8025	IN, (SKAMANIA STEELHEAD STRAIN)				NY, CALEDONIA HATCHERY	1988	10100	16MO	CATTARAUGUS CREEK
8025		1988	18000	16MO					CHAUTAUQUA CREEK
8005	NY, VARIOUS (FINGER KK X DOMESTIC SS)	1988	6780	YEAR					LK ONTARIO TRIBUTARIES
8004	NY, VARIOUS HATCHERIES (SKAMANIA SS)	1988	107000	YEAR					LK ONTARIO TRIBUTARIES
8003	NY, VARIOUS HATCHERIES (WA SS)	1988	293700	YEAR					LK ONTARIO TRIBUTARIES
8006	NY, VARIOUS HATCHERIES	1988	308050	FING					LK ONTARIO TRIBUTARIES
9005	NY, SALMON R H (SALMON R/SS)	1989	13100	F FING	NY, NYDEC				CATTARAUGUS CR (STOCKING)
9005		1989	102900	YEAR					4 LK ERIE TRIBS (STOCKING)
9017	NY, CALEDONIA H (SALMON R/WA SS)	1989	212440	YEAR	NY, NYDEC				LAKE ONTARIO (STOCKING)
9018	NY, SALMON R H (SALMON R/WA SS)	1989	171970	YEAR	NY, NYDEC				LAKE ONTARIO (STOCKING)
9018		1989	75000	F FING					LAKE ONTARIO (STOCKING)
9019	NY, CALEDONIA HATCHERY (DOM/NASHUA)	1989	93790	YEAR	NY, NYDEC				LAKE ONTARIO (STOCKING)
9019		1989	25000	F FING					LAKE ONTARIO (STOCKING)
0001	NY, SALMON RIVER H (LK ONTARIO/WILD)				NY, NYDEC, LAKE ERIE UNIT	1990	120700	YEAR	LAKE ERIE (STOCKING)
0002	NY, SALMON RIVER H (LK ONTARIO/WILD)	1990	48400	FING	NY, NYDEC, LAKE ERIE UNIT				LAKE ERIE (STOCKING)
0003	NY, CALEDONIA H (SALMON RIVER/WA SS)	1990	287200	YEAR	NY, NYDEC				LAKE ONTARIO (STOCKING)
0004	NY, SALMON RIVER H (SALMON R/WA SS)	1990	125000	YEAR	NY, NYDEC				LAKE ONTARIO (STOCKING)
0005	NY, SALMON RIVER H (SALMON R/WA SS)	1990	180000	FING	NY, NYDEC				LAKE ONTARIO (STOCKING)
0006	NY, SALMON RIVER H (SALMON R/WA SS)	P1991	375000	YEAR	NY, NYDEC				LAKE ONTARIO (STOCKING)
0007	NY, SALMON R H (LK ONTARIO/SKAM SS)	P1991	82000	YEAR	NY, NYDEC (PRODUCE SPRING RUN)				LAKE ONTARIO (STOCKING)
1005	NY, LAKE ONTARIO (STEELHEAD/WILD)	1991	143000	YEAR	NY, NYDEC LAKE ERIE UNIT				PUBLIC STOCKING (ANNUALLY SCH)
1015	NY, LAKE ONTARIO (STEELHEAD/WILD)	P1992	375000	YEAR	NY, NYDEC LK ONTARIO				PUBLIC FISH/BROODSTOCK

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1991

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)	YEAR	NUMBER	STAGE	TRANSFERS SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	FINAL DISPOSITION LOCATION (PURPOSE)
ONCORHYNCHUS MYKISS (RAINBOW TROUT) - CONTINUED									
1016	NY, LAKE ONTARIO (STEELHEAD/SKAMANIC)	P1992	82000	YEAR	NY, NYDEC LAKE ONTARIO				PUBLIC FISH/BROOKSTOCK
1017	NY, LK ONTARIO (WASHINGTON/SALMON R)	1991	519300	YEAR	NY, NYDEC LAKE ONTARIO				PUBLIC FISH/BROODSTOCK
1018	NY, LAKE ONTARIO (STEELHEAD/SKAMANIC)	1991	32000	YEAR	NY, NYDEC LAKE ONTARIO				PUBLIC FISH/BROODSTOCK
1019	NY, LK ONT (STEELHEAD/WASH/SAL RIVER)	1991	175000	S FING	NY, NYDEC LAKE ONTARIO				PUBLIC STOCKING
1020	NY, LK ONT (STEELHED/WASH/SAL RIVER)	1991	40000	F FING	NY, NYDEC LAKE ONTARIO				PUBLIC STOCKING
ONCORHYNCHUS NERKA KOKANEE (KOKANEE SALMON)									
6002	CT, EAST TWIN LAKE				NY, NYDEC/ROME HATCHERY	P1986	165090	0+	6-10 LAKES (ENHANCEMENT)
7001	CT, EAST TWIN LAKE	1987	197000	EGGS	NY, NYDEC/CATSKILL HATCHERY	P1987			6-10 LAKES (ENHANCEMENT)
7010	CT, EAST TWIN LAKE				NY, NYDEC/ROME H (REARING)	P1987	90300	FRY	8 INLAND LK (ENHANCEMENT)
9001	CT, EAST TWIN LK H (EAST TWIN LK)	1988	93000	EGGS	NY, NYDEC/CATSKILL HATCHERY	1988	93000	EGGS	SEE NEXT LINE
9001					NY, ROME HATCHERY	1989	55000	FING	INLAND LKS (STOCKING)
0014	CT, EAST TWIN LAKE	1989	186000	EGGS	NY, NYDEC/CATSKILL HATCHERY	1989	135000	EGGS	SEE NEXT LINE
0014					NY, ROME HATCHERY	1990	115000	FING	UNIDENTIFIED (ENHANCEMENT)
1001	CT, EAST TWIN LAKE	1990	100000	EGGS	NY, CATSKILL H				
1001		1990	100000	EGGS	NY, ROME HATCHERY				
1001					FACILITY NOT STATED	1991	78000	FING	NYDEC (REC FISHING 7 LAKES)
ONCORHYNCHUS TSHAWYTSCHA (CHINOOK SALMON)									
6009	MI, (LAKE MICHIGAN)				NY, NYDEC/SALMON RIVER H	1986	529400	SP FING	LK ERIE (SPORT FISHING)
6012	NY, 2 HATCHERIES (SALMON RIVER)	1986	2849000	SP FING					LK ONTARIO (SPORT FISHING)
7033	NY, 2 HATCHERIES (SALMON RIVER)	1987	3111330		NY, NYDEC				LK ONTARIO (SPORT FISHING)
8014	NY, 2 HATCHERIES (SALMON RIVER)	1988	2848000	SP FING	NY, NYDEC				LK ONTARIO (SPORT FISHING)
8029	NY, SALMON R H (LK ONTARIO/SALMON R)	1988	500000	6MO					CATTARAUGUS CR, LAKE ERIE
8029		1988	20000	6MO					18 MILE CREEK, LAKE ERIE
9015	NY, SALMON R H (LK ONTARIO/SALMON R)	1989	620000	SP FING	NY, NYDEC				3 LAKE ERIE TRIBUTARIES
9015		1989	2212200	SP FING					LAKE ONTARIO (STOCKING)
9016	NY, CALEDONIA H (LK ONTARIO/SALMON R)	1989	540000	SP FING	NY, NYDEC				LAKE ONTARIO (STOCKING)
0015	NY, SALMON R H (LK ONTARIO/LK ONTARIO)	1990	574200	SP FING	NY, NYDEC, LAKE ERIE UNIT				LAKE ERIE (STOCKING)
0016	NY, CALEDONIA H (LK ONTARIO/SALMON R)	1990	540000	SP FING	NY, NYDEC				LAKE ONTARIO (STOCKING)
0017	NY, SALMON R H (LK ONTARIO/SALMON R)	1990	2180000	SP FING	NY, NYDEC (PRODUCE SPAWNING RUN)				LAKE ONTARIO (STOCKING)
0018	NY, SALMON R H (LK ONTARIO/SALMON R)	P1991	2700000	SP FING	NY, NYDEC (PRODUCE SPAWING RUN)				LAKE ONTARIO (STOCKING)
1003	NY, SALMON R H (LK ONTARIO/SALMON R)	1991	525000	S FING	NY, NYDEC LAKE ERIE UNIT				PUBLIC STOCKING
1013	NY, SALMON R H (LK ONTARIO/SALMON R)	P1992	2700000	S FING	NY, NYDEC LAKE ONTARIO				PUBLIC FISH/SPAWN RUN
1014	NY, SALMON R H (LK ONTARIO/SALMON R)	1991	2835000	S FING	NY, NYDEC LAKE ONTARIO				PUBLIC FISH/SPAWN RUN
SALMO SALAR (ATLANTIC SALMON)									
6017	NY, 2 H (PENOBSCOT & LITTLE CLEAR)	1986	55000	YEAR					LK ONTARIO (RESTORATION)
7023	NY, CORTLAND HATCHERY (PENOBSCOT)	1987	9130	YEAR					LK ONTARIO (RESTORATION)

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1991

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)				TRANSFERS				FINAL DISPOSITION LOCATION (PURPOSE)
		YEAR	NUMBER	STAGE	SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	
SALMO SALAR (ATLANTIC SALMON) - CONTINUED									
7017	NY, ADIRONDACK H (LITTLE CLEAR)	1987	49000	YEAR					LK ONTARIO (RESTORATION)
8001	NY, CORTLAND HATCHERY (PENOBSCOT)	1988	5530	FING					LK ONTARIO TRIBUTARIES
8002	NY, ADIRONDACK H (LITTLE CLEAR)				NY, VARIOUS HATCHERIES	1988	31900	YEAR	LK ONTARIO TRIBUTARIES
9010	VT, PITTSFORD H (GRAND LK STREAM)	1989	44020	YEAR	NY, NYDEC				LK ONTARIO (STOCKING)
9011	NY, TUNISON H (PENOBSCOT)	1989	290	21MO	NY, NYDEC				LK ONTARIO (STOCKING)
9011		1989	4710	YEAR					LK ONTARIO (STOCKING)
9011		1989	14670	F FING					LK ONTARIO (STOCKING)
SALMO TRUTTA (BROWN TROUT)									
6014	NY, 3 HATCHERIES (DOMESTIC)	1986	442000	YEAR					LK ONTARIO (SPORT FISHING)
6010	WEST GERMANY (SEA RUN)	1986	20000	EGGS	NY, COLD SPRINGS HATCHERY	P			LONG ISLAND
6001	WEST GERMANY (SEEFORELLEN)				NY, NYDEC/CATSKILL HATCHERY	P1986	12000	1+	SEVERAL LAKES (ENHANCEMENT)
7022	NY, SEVERAL HATCHERIES (DOMESTIC)	1987	25000	YEAR	NY, NYDEC				DUNKIRK HARBOUR, LAKE ERIE
7022		1987	25000	YEAR					CATTARAUGUS CR, LAKE ERIE
7030	NY, 2 HATCHERIES (DOMESTIC)	1987	417760	YEAR					LAKE ONTARIO (ENHANCEMENT)
8023	NY, CATSKILL H (SEEFORELLEN, W GERMAN)				NY, CALEDONIA HATCHERY (REARING)	1988	20020	3MO	CANADAWAY CR, LAKE ERIE
8022	NY, RANDOLPH H (DOMESTIC/RANDOLPH)	1988	5000	10MO					BUFFALO CR, LAKE ERIE
8019	NY, RANDOLPH H (DOMESTIC/RANDOLPH)	1988	7400	10MO					18 MILE CREEK, LAKE ERIE
8019		1988	5000	10MO					CANADAWAY CR, LAKE ERIE
8019		1988	5000	10MO					CATTARAUGUS CR, LAKE ERIE
8018	NY, CATSKILL HATCHERY (ROME)				NY, CALEDONIA HATCHERY (REARING)	1988	19000	17MO	SILVER CREEK, LAKE ERIE
8016	NY, RANDOLPH HATCHERY (ROME LAB)	1988	5000	17MO					DUNKIRK HARBOUR, LAKE ERIE
8017	NY, BATH HATCHERY				NY, CALEDONIA HATCHERY (REARING)	1988	14000	17MO	DUNKIRK HARBOUR, LAKE ERIE
8009	NY, VARIOUS H (SEEFORELLEN)	1988	20000	FING					LAKE ONTARIO (ENHANCEMENT)
8010	NY, VARIOUS H (DOMESTIC OR SKAMANIA)	1988	26370	FING					LAKE ONTARIO (ENHANCEMENT)
8011	NY, VARIOUS H (DOMESTIC OR SKAMANIA)	1988	404310	YEAR					LAKE ONTARIO (ENHANCEMENT)
9002	NY, CATSKILL H (CATSKILL/SEEFORELLEN)	1989	45000	YEAR	NY, NYDEC				SEVERAL LAKES (STOCKING)
9002		1989	15130	YEAR					DUNKIRK HARBOUR (STOCKING)
9002		1989	40000	YEAR					LAKE ONTARIO (STOCKING)
9012	NY, CALEDONIA H (CALEDONIA/ROME LAB)	1989	282630	YEAR	NY, NYDEC				LAKE ONTARIO (STOCKING)
9012		1989	37950	F FING					LAKE ONTARIO (STOCKING)
9020	NY, SALMON RIVER HATCHERY (/ROME LAB)	1989	84680	YEAR	NY, NYDEC				LAKE ONTARIO (STOCKING)
0019	NY, RANDOLPH H (DOMESTIC/RANDOLPH)	1990	22000	UNID	NY, DEC LK ERIE UNIT (RV FIN CLIP)				LAKE ERIE (STOCKING)
0020	NY, CATSKILL H (CATSKILL/SEEFORELLEN)	1990	25000	YEAR	NY, DEC LK ERIE UNIT (LP FIN CLIP)				LAKE ERIE (STOCKING)
0021	NY, CALEDONIA H (CALEDONIA/SEEFORELLEN)	1990	37300	F FING	NY, NYDEC LAKE ERIE UNIT				LAKE ERIE (STOCKING)
0022	NY, CATSKILL H (CATSKILL/SEEFORELLEN)	1990	48450	YEAR	NY, NYDEC				LAKE ONTARIO (STOCKING)
0024	NY, CATSKILL H (CATSKILL/SEEFORELLEN)	1990	45000	YEAR	NY, NYDEC (FISHERY ENHANCEMENT)				LAKE ONTARIO (STOCKING)
0023	NY, CATSKILL H (CATSKILL/SEEFORELLEN)	P1991	40000	YEAR	NY, NYDEC				10 INLAND LAKES (STOCKING)
1002	NY, CALEDONIA H (CATSKILL/SEEFORELLEN)	1991	40000	YEAR	NY, NYDEC				STOCKING 10 LAKES
1004	NY, CATSKILL H (CATSKILL/SEEFORELLEN)	1991	23000	YEAR	NY, NYDEC LAKE ERIE UNIT				PUBLIC STOCKING
1012	NY, CALEDONIA H (LK ONT/SEEFORELLEN)	P1993	40000	YEAR	NY, NYDEC LAKE ONTARIO				PUBLIC FISHING
1011	NY, CALEDONIA H (LK ONT/SEEFORELLEN)	1991	36800	YEAR	NY, NYDEC LAKE ONTARIO				PUBLIC FISHING

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1991

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)	TRANSFERS						FINAL DISPOSITION LOCATION (PURPOSE)
		YEAR	NUMBER	STAGE	SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	
SALVELINUS NAMAYCUSH (LAKE TROUT)									
6013	PA, ALLEGHENY HATCHERY (LK ONTARIO)	1986	1382000	YEAR					LK ONTARIO (REHABILITATION)
7031	PA, ALLEGHENY HATCHERY (LK ONTARIO)	1987	366300	FING					LK ONTARIO (REHABILITATION)
7032	PA, ALLEGHENY HATCHERY (LK ONTARIO)	1987	818100	YEAR					LK ONTARIO (REHABILITATION)
8012	PA, ALLEGHENY HATCHERY (LK ONTARIO)	1988	247100	FING					LK ONTARIO (RESTORATION)
8013	PA, ALLEGHENY HATCHERY (LK ONTARIO)	1988	767500	YEAR					LK ONTARIO (RESTORATION)
9006	PA, ALLEGHENY HATCHERY (SENECA LAKE)	1989	352300	YEAR	NY, NYDEC				LK ONTARIO (REHABILITATION)
9007	PA, ALLEGHENY HATCHERY (SUPERIOR)	1989	240000	YEAR	NY, NYDEC				LK ONTARIO (REHABILITATION)
9007		1989	19500	F FING					LK ONTARIO (REHABILITATION)
9008	PA, ALLEGHENY HATCHERY (LK ONTARIO)	1989	158000	YEAR	NY, NYDEC				LK ONTARIO (REHABILITATION)
9008		1989	212500	F FING					LK ONTARIO (REHABILITATION)
9009	NY, CALEDONIA HATCHERY (SENECA LK/SENECA)	1989	28000	YEAR	NY, NYDEC				LK ONTARIO (REHABILITATION)

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1991

NOVA SCOTIA

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)	TRANSFERS YEAR	NUMBER	STAGE	SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	FINAL DISPOSITION LOCATION (PURPOSE)
ONCORHYNCHUS MYKISS (RAINBOW TROUT)									
6001	WV, WHITE SULPHUR SPRINGS HATCHERY	1986	100000	EGGS	NS, DFO/MERLIN FISH FARMS				WESTCHESTER (FISH FARM)
6001		1986	50000	EGGS	NS, DFO/COLDBROOK FCS				
6001		1986	100000	EGGS	NS, DFO/NSDF/ST PETERS HATCHERY				
7003	WA, BEITEYS RESORT	1987	550000	EGGS	NS, NSDF/ST PETERS HATCHERY	P			
7005	ONT, SPRING VALLEY HATCHERY	1987	150000	EGGS	NS, NSDF/ST PETERS HATCHERY	P			
7004	ONT, AQUAFARMS CANADA	1987	50000	EGGS	NS, MERLIN FISH FARMS				WESTCHESTER (FISH FARM)
7001	WV, WHITE SULPHUR SP H (WYTHEVILLE)	1987	250224	EGGS	NS, DFO, NSDF/FRASERS MILLS H	P			(LOCAL STOCKING)
7002	WA, BEITEYS RESORT	1987	100000	EGGS	NS, MERLIN FISH FARMS				WESTCHESTER (FISH FARM)
7006	PEI, INTEGRATED AQUATICS	1987	45000	FING	NS, OSTREA SEA FARMS				SHAD BAY (AQUACULTURE)
8013	ONT, RAINBOW SPRINGS HATCHERY	1988	2000	FING	NS, EPS/DARTMOUTH (RESEARCH)				
8012	ONT, RAINBOW SPRINGS HATCHERY	1988	35000	FRY	NS, NOVA AQUA SMOLT				GLACE BAY (AQUACULTURE)
8011	WA, BEITEYS RESORT	1988	200000	FRY	NS, NOVA AQUA SMOLT				GLACE BAY (AQUACULTURE)
8010	ONT, SPRING VALLEY HATCHERY	1988	250000	EGGS	NS, NSDF/FRASERS MILLS H	P			(LOCAL STOCKING)
8009	ONT, AQUAFARMS CANADA	1988	30000	EGGS	NS, NSDF/FRASERS MILLS H (REARING)	P			(LOCAL STOCKING)
8008	ONT, AQUAFARMS CANADA	1988	100000	EGGS	NS, NSDF/ST PETERS HATCHERY	P			(ENHANCEMENT)
8007	WV, WHITE SULPHUR SPRINGS HATCHERY	1988	250000	EGGS	NS, NSDF/FRASERS MILLS H (REARING)	P			(ENHANCEMENT)
8006	ONT, RAINBOW SPRINGS HATCHERY	1988	200000	TR EGGS	NS, NOVA AQUA SMOLT (REARING)				GLACE BAY (AQUACULTURE)
9004	ONT, VAN AQUA INC, BRANTFORD	1989	6000	FING	NS, NOVA AQUA SEA LTD				GLACE BAY
9005	WA, BEITEYS RESORT	1989	150000	EGGS	NS, MERLIN FISH FARMS				WENTWORTH (FISH FARMS)
9007	ONT, RAINBOW SPRINGS HATCHERY	1989	100000	EGGS	NS, NOVA AQUA SMOLT				GLACE BAY (AQUACULTURE)
9008	PEI, INTEGRATED AQUATICS	1989	125000	FING	NS, NOVA AQUA SMOLT				GLACE BAY (AQUACULTURE)
9009	PEI, BROOKVALLEY MARINE	1989	25000	FING	NS, NOVA AQUA SMOLT				GLACE BAY (AQUACULTURE)
9010	ONT, SPRING VALLEY H, PETERSBURG	1989	100000	EGGS	NS, LITTLE HARB TROUT FARM				TRENTON (TROUT FARM)
9011	WV, WHITE SULPHUR SPRINGS HATCHERY	1989	250000	EGGS	NS, NSDF, FRASERS MILLS H				
0020	ONT, RAINBOW SPRINGS HATCHERY	1990	40000	FING	NS, NOVA AQUA SMOLT/GLACE BAY				
0021	PEI, INTEGRATED AQUATICS	1990	20000	FING	NS, NOVA AQUA SEA LTD/GLACE BAY				
0022	PEI, BROOKVALLEY MARINE	1990	2000	FING	NS, NOVA AQUA SMOLT/GLACE BAY				
0023	ONT, SPRING VALLEY H, PETERSBURG	1990	150000	EGGS	NS, LITTLE HARB TROUT FARM/PICTOU				
0024	ONT, RAINBOW SPRINGS HATCHERY	1990	3000	FING	NS, ENVIRONMENT CANADA/DARTMOUTH				
0025	PEI, BROOKVALLEY MARINE	1990	46000	FING	NS, LOCH BRAS D'OR SALMON				
0026	ONT, RAINBOW SPRINGS HATCHERY	1990	50000	TR EGGS	NS, SUGAR LOAF FISH FARM/OXFORD				
0027	ONT, SPRING VALLEY H, PETERSBURG	1990	100000	EGGS	NS, FRASERS MILLS H/ ST ANDREWS				
1001	ONT, RAINBOW SPRINGS H, THAMESFORD	1991	75000	EGGS	NS, SUGAR LOAF FISH FARM/OXFORD				
1002	ONT, RAINBOW SPRINGS H, THAMESFORD	1991	25000	EGGS	NS, R PHILIP TROUT FARM/OXFORD				
1003	ONT, RAINBOW SPRINGS H, THAMESFORD	1991	5000	EGGS	NS, ENVIRONMENT CANADA/DARTMOUTH				
1004	ONT, AQUAFARMS CANADA, FEVERSHAM	1991	20000	FING	NS, MERLIN FARMS/WENTWORTH VALLEY				
1006	QUE, PISCICULTURE ALLE/ST PHILEMON	1991	150000	EGGS	NS, MERLIN FISH FARMS, WENTWORTH V				
1007	PEI, BROOK VALLEY MARINE	1991	5000	FING	NS, R PHILIP TROUT FARM, OXFORD				
1008	PEI, BROOK VALLEY MARINE	1991	12600	FING	NS, R PHILIP TROUT FARM/OXFORD				
1009	ONT, RAINBOW SPRINGS H, THAMESFORD	1991	2000	FING	NS, ENVIRONMENT CANADA/DARTMOUTH				
1010	PEI, BROOK VALLEY MARINE	1991	18000	FING	NS, SUGARLOAF FISH FARM				
1011	ONT, RAINBOW SPRINGS H, THAMESFORD	1991	1000	FING	NS, ENVIRONMENT CANADA/DARTMOUTH				

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FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)	YEAR	NUMBER	STAGE	TRANSFERS SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	FINAL DISPOSITION LOCATION (PURPOSE)
ONCORHYNCHUS MYKISS (RAINBOW TROUT) - CONTINUED									
1012	ONT, RAINBOW SPRINGS H, THAMESFORD	1991	50000	EGGS	NS, SUGARLOAF FISH FARM				
1013	ONT, SPRING VALLEY H, PETERSBURG	1991	125000	EGGS	NS, LITTLE HARBOUR FARM/PICTOU				
1014	ONT, RAINBOW SPRINGS H, THAMESFORD	1991	100000	EGGS	NS, LITTLE HARBOUR FARM/PICTOU				
1015	ONT, AQUAFARMS CANADA, FEBERSHAM	1991	85000	FING	NS, ST PETERS HATCHERY/ST PETERS				
1016	ONT, RAINBOW SPRINGS H, THAMESFORD	1991	2500	FING	NS, ENVIRONMENT CANADA/DARTMOUTH				
1017	MT, ENNIS NATIONAL F HATCHERY	1991	250000	EGGS	NS, DFO FRASERS MILLS HATCHERY				
1018	ONT, RAINBOW SPRINGS H, THAMESFORD	1991	3000	FING	NS, ENVIRONMENT CANADA/DARTMOUTH				
1019	PEI, BROOK VALLEY MARINE, SOURIS	1991	4000	FING	NS, SUGARLOAF FISH H/WENTWORTH				
SALMO SALAR (ATLANTIC SALMON)									
8004	NB, HUNTSMAN MARINE LAB (SJR C)	1988	50000	FRY	NS, NOVA AQUA SMOLT				(AQUACULTURE)
8003	NB, MACTAQUAC FCS (ST JOHN R)	1988	50000	EGGS	NS, DFO/COLDBROOK FCS (REARING)	P			(AQUACULTURE) BROODSTOCK
9012	NB, MACTAQUAC FCS	1989	50000	EGGS	NS, DFO/COLDBROOK FCS (REARING)	P			(AQUACULTURE) BROODSTOCK
9013	, AQUAVENTURES	1989	100000	EGGS	NS, NOVA AQUA SMOLT (EXPERIMENTAL)				GLACE BAY
9006	NB, CHAMCOOK	1989	50000	FING	NS, NOVA AQUA SMOLT				GLACE BAY (AQUACULTURE)
0028	NB, BRIDEN ASSOCIATION & SEA FARMS	1990	72000	FING	NS, NOVA AQUA SMOLT (EXPERIMENTAL)				GLACE BAY
0029	NB, SEA FARMS CANADA, SPRINGDALE	1990	130000	SAC FRY	NS, NOVA AQUA SMOLT (QUARANTINE)				GLACE BAY (EXPERIMENTAL)
1021	NB, ASF CHAMCOOK	1991	270	PARR	NS, MARINE GENE LAB, DALHOUSIE UNIV				OUT OF QUARANTINE
1022	QUE, BAIE DES CHALEURS, ST OMER	1991	180	PARR 0+	NS, DFO HALIFAX LAB				OUT OF QUARANTINE
SALMO SALAR (LANDLOCKED ATLANTIC SALMON)									
8005	ME, GRAND LAKE STREAM HATCHERY	1988	25000	EGGS	NS, M MULLEN/WEYMOUTH (REARING)				BEAR RIVER (AQUACULTURE)
9002	ME, GRAND LAKE STREAM HATCHERY	1989	50000	EGGS	NS, FRASERS MILLS HATCHERY				
SALVELINUS ALPINUS (ARCTIC CHAR)									
8001	MAN, ROCKWOOD HATCHERY	1988	1600	EGGS	NS, NOVA AQUA SMOLT	P			GLACE BAY (AQUACULTURE)
9001	MAN, ROCKWOOD HATCHERY	1989	3000	EGGS	NS, SALMONID PROPAGATION ASSOC				ST PETERS
9003	MAN, ROCKWOOD HATCHERY	1989	5000	EGGS	NS, MICMAC SMOLTS				WEYMOUTH
9014	NB, PURTILL, SUSSEX	1989	10000	EGGS	NS, BRAS D'OR SALMON (TEST)				LITTLE NARROWS
9015	NB, PURTILL, SUSSEX	1989	10000	EGGS	NS, SPA CO-OP (EXPERIMENTAL)				ST PETERS
0030	NB, PURTILL, SUSSEX	1990	8000	FRY	NS, SALMONID PROPAGATION ASSOC LTD				ST PETERS (EXPERIMENTAL)
0031	NB, PURTILL, SUSSEX	1990	5000	FRY	NS, LOCH BRAS D'OR SALMON				BADDECK (EXPERIMENTAL)
1020	PEI, INTEGRATED AQUATIC, CHAR QUARANTINE	1991	4500	FING	NS, SALMONID PROP ASSO/ST PETERS				
SALVELINUS FONTINALIS (BROOK TROUT)									
8002	ME, PHILLIPS HATCHERY	1988	100000	EGGS	NS, NSDF/FRASERS MILLS H (REARING)	P			VARIOUS WATERS (STOCKING)
1023	NB, GREENACRES TROUT H, GRAND DIGUE	1991	400	3" 4"	NS, LARRY PEDERSON/AMHERST				

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ONTARIO

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)	YEAR	NUMBER	STAGE	TRANSFERS SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	FINAL DISPOSITION LOCATION (PURPOSE)
ONCORHYNCHUS MYKISS (RAINBOW TROUT)									
8004	IN, MIXSABAH HATCHERY (/SKAMANIA)	1988	56000	E EGGS	ONT, OMNR/NORMANDALE H (QUAR)	1988	30000	FING	SEE NEXT LINE
8004					ONT, NORMANDALE HATCHERY	1989	25000	YEAR	GEORGIAN BAY (RESTORATION)
8006	MAN, ROCKWOOD HATCHERY (DOM/TAGWERKER)	1988	25000	E EGGS	ONT, PINE VALLEY HATCHERY (QUAR)	1989	?	YEAR	PRIVATE POND (AQUACULTURE)
9005	IN, TWIN BRANCH H (LK MICHIGAN/SKAM)	1989	80000	E EGGS	ONT, OMNR/NORMANDALE H (QUAR)	1989	35000	FING	SEE NEXT LINE
9005					ONT, NORMANDALE HATCHERY	1990	31000	YEAR	GEORGIAN BAY (RESTORATION)
0002	IN, TWIN BRANCH H (LK MICHIGAN/SKAM)	*1990	115000	E EGGS	ONT, OMNR/NORMANDALE H (QUAR)	1990	45000	FING	SEE NEXT LINE
0002					ONT, NORMANDALE HATCHERY	1991	35000	YEAR	GEORGIAN BAY (RESTORATION)
1002	WA, BEITEYS RESORT (DOMESTIC SP RUN)	*1991	70000	E EGGS	ONT, OMNR/ALMA HATCHERY (QUAR)	1992	45000	FING	(PRIVATE AQUACULTURE)
2002	WA, BEITEYS RESORT (DOMESTIC SP RUN)	1992	70000	E EGGS	ONT, U OF GUELPH (ALMA QUAR FAC)	P1992	50000	FING	PRIVATE SECTOR (VARIOUS)
SALMO SALAR (ATLANTIC SALMON)									
7010	NS, COLDBROOK FCS (LAHAVE RIVER)	*1987	50000	E EGGS	ONT, OMNR/NORMANDALE H (QUAR)	1988	35000	FING	SEE NEXT LINE
7010					NORMANDALE HATCHERY	1989	27000	YEAR	LK ONTARIO (RESTORATION)
7003	ME, GREEN LK H (PENOBSCOT RIVER)	*1987	58000	E EGGS	ONT, OMNR/NORMANDALE H (QUAR)	1987	35000	FING	SEE NEXT LINE
7003					NORMANDALE HATCHERY	1988	27000	YEAR	LK ONTARIO (RESTORATION)
7002	SCO, ALLT MOR HATCHERY (LOCAL RIVER)	*1987	35000	E EGGS	ONT, OMNR/NORMANDALE H (QUAR)	1987			SEE NEXT LINE
7002					NORMANDALE HATCHERY	1987	25000	FING	(PRIVATE ACQUACULTURE)
7011	NB, MACTAQUAC FCS (SAINT JOHN RIVER)	*1987	35000	E EGGS	ONT, OMNR/NORMANDALE H (QUAR)	1987			SEE NEXT LINE
7011					NORMANDALE HATCHERY	1988	32000	YEAR	(PRIVATE AQUACULTURE)
1003	NS, MERSEY HATCHERY	*1987	800	FING	ONT, ONTARIO HYDRO (RESEARCH)	1988			STOCK DESTROYED
8011	NS, COLDBROOK FCS (LAHAVE RIVER)	*1988	61000	E EGGS	ONT, OMNR/NORMANDALE H (QUAR)	1989		FING	SEE NEXT LINE
8011					NORMANDALE HATCHERY	1990	32000	YEAR	LK ONTARIO (RESTORATION)
9001	NS, COLDBROOK FCS (LAHAVE RIVER)	*1989	60000	E EGGS	ONT, OMNR/NORMANDALE H (QUAR)	1990	40500	FING	SEE NEXT LINE
9001					NORMANDALE HATCHERY	1991	36000	YEAR	LK ONTARIO (RESTORATION)
9001					NORMANDALE HATCHERY	1991	4500	YEAR	INLAND RESTORATION
0003	NS, COLDBROOK FCS (LAHAVE RIVER)	*1990	80000	E EGGS	ONT, OMNR/NORMANDALE H (QUAR)	1991	35000	FING	SEE NEXT LINE
0003					NORMANDALE HATCHERY	P1992	32000	YEAR	LK ONTARIO (RESTORATION)
1004	NS, COLDBROOK FCS (LAHAVE RIVER)	1991	60000	E EGGS	ONT, OMNR/NORMANDALE H (QUAR)	P1992	50000	FING	SEE NEXT LINE
1004					RINGWOOD FCS	P1993	45000	YEAR	LK ONTARIO (RESTORATION)
2001	NB, ST ANDREWS RESEARCH STA (UNKNOWN)	1991	40000	EGGS	UNIVERSITY OF GUELPH (RESEARCH)	1992	40000	SAC FRY	DESTROYED
2004	NS, COLDBROOK HAT (LAHAVE RIVER)	P1992	80000	E EGGS	ONT, OMNR/NORMANDALE H (QUAR)	P1993	50000	FING	RINGWOOD FCS
2004					OMNR LAKE ONTARIO	P1994		YEAR	REHAB STOCKING
SALMO SALAR (LANDLOCKED ATLANTIC SALMON)									
6002	NY, ADIRONDACK H (LITTLE CLEAR POND)	*1986	3400	E EGGS	ONT, OMNR/NORMANDALE H (QUAR)	1987			SEE NEXT LINE
6002					NORMANDALE HATCHERY	1987	1000	SMOLTS	LK ONTARIO (RESTORATION)
8005	ME, GRAND LK STREAM H (WEST GRAND LK)	*1988	75000	E EGGS	ONT, OMNR/NORMANDALE H (QUAR)	1988		FING	SEE NEXT LINE
8005					NORMANDALE HATCHERY	1989	58000	YEAR	LK ONTARIO (RESTORATION)
9002	ME, GRAND LK STREAM H (WEST GRAND LK)	1989	63000	E EGGS	ONT, OMNR/NORMANDALE H (QUAR)	1989		FING	SEE NEXT LINE
9002					NORMANDALE HATCHERY	1989	52000	YEAR	LK ONTARIO (RESTORATION)

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FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)	YEAR	NUMBER	STAGE	TRANSFERS SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	FINAL DISPOSITION LOCATION (PURPOSE)
SALMO SALAR (LANDLOCKED ATLANTIC SALMON) - CONTINUED									
0006	ME, GRAND LK STREAM H (WEST GRAND LK)	*1990	110000	E EGGS	ONT, OMNR/NORMANDALE & Alma (Quar)	1990	81000	FING	SEE NEXT 2 LINES
0006					NORMANDALE & ALMA HATCHERIES	1991	31000	YEAR	(REHABILITATION STOCKING)
0006					NORMANDALE & ALMA HATCHERIES	1991	24000	YEAR	BROODSTOCK DEV
SALVELINUS ALPINUS (ARCTIC CHAR)									
7007	NB, HUNTSMAN MARINE LABORATORY	1987	30	FING	ONT, SIR WILFRED U (RESEARCH)				STOCK DESTROYED
7009	ICE, UNIVERSITY OF ICELAND	1987	3000	EGGS	ONT, U OF GUELPH (RESEARCH)				STOCK DESTROYED
7006	NB, HUNTSMAN MARINE LABORATORY	1987	200	FING	ONT, U OF GUELPH (RESEARCH)				STOCK DESTROYED
8009	ICE, U OF ICELAND (THINGVALLAVATN LK)	1988	2000	EGGS	ONT, U OF GUELPH (RESEARCH)				STOCK DESTROYED
8007	MAN, ROCKWOOD H (FRASER R, LAB)	*1988	5000	E EGGS	ONT, PINE VALLEY HATCHERY (QUAR)	1989	3500		COLD WATER H (PRIVATE AQC)
9006	MAN, ROCKWOOD H (FRASER R, LAB)	*1989	5000	E EGGS	ONT, ONTARIO VET COLLEGE (AQC DEV)				ALL FISH DIED
9003	MAN, ROCKWOOD H (FRASER R, LAB)	*1989	30000	E EGGS	ONT, COLDWATER & ALMA H (QUAR)	P1990	20000	FING	(PRIVATE AQC BROODSTOCK)
0001	MAN, ROCKWOOD HATCHERY (VARIOUS)	*1990	67000	E EGGS	ONT, OMNR/COLDWATER & Alma H (Quar)	P1991	30000	FING	(PRIVATE AQUACULTURE)
1001	MAN, ROCKWOOD HATCHERY (VARIOUS)	P1991	68800	E EGGS	ONT, COLDWATER & ALMA H (QUAR)	P1992		FING	SEE NEXT 2 LINES
1001					COLDWATER & ALMA HATCHERIES	P1992		FING	(AQC BROODSTOCK)
1001					COLDWATER & ALMA HATCHERIES	P1992		FING	(AQC BROODSTOCK)
2005	MAN, ROCKWOOD HATCHERY (VARIOUS)	P1992	50000	E EGGS	U OF GUELPH (ALMA QUAR UNIT)	P1993			SEE NEXT LINE
2005						P1993	40000	FING	PRIVATE SECT (BROODSTOCK DEV)
SALVELINUS FONTINALIS X SALVELINUS ALPINUS (CHARBROOK)									
8008	QUE, SILVER SPRINGS HATCHERY	1988	500	FISH	ONT, U OF OTTAWA (RESEARCH)				INCINERATED
SALVELINUS NAMAYCUSH (LAKE TROUT)									
1005	NY, SENECA LAKE (SENECA LAKE/WILD)	*1990	70000	G EGGS	ONT, OMNR/NORMANDALE (QUAR)	1991	65000	FING	SEE NEXT LINE
1005					WHITE LAKE HATCHERY	P1992	51000	YEAR	LK ONTARIO (REHABILITATION)
1005					LAKE ONTARIO	P1992	14000	YEAR	BROODSTOCK DEV
1006	NY, SENECA LAKE (SENECA LAKE/WILD)	1991	70000	G EGGS	ONT, OMNR/NORMANDALE H (QUAR)	P1992	60000	FING	SEE NEXT LINE
1006					WHITE LAKE HATCHERY	P1993	50000	YEAR	LK ONTARIO (REHABILITATION)
2003	NY, SENECA LAKE (SENECA LAKE/WILD)	P1992	70000	G EGGS	ONT, OMNR/NORMANDALE H (QUAR)	P1993	60000	FING	SEE NEXT LINE
2003					NORMANDALE FCS	P1994	50000	YEAR	REHAB & BROODSTOCK DEV

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1991

PRINCE EDWARD ISLAND

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)	TRANSFERS YEAR	NUMBER	STAGE	SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	FINAL DISPOSITION LOCATION (PURPOSE)
ONCORHYNCHUS KISUTCH (COHO SALMON)									
9017	BC, PRIVATE AQUACULTURE FACILITY	1989	10000	E EGGS	PEI, AQUA HEALTH (VACCINE DEV)				TO BE DESTROYED
0009	BC, CHILLIWACK RIVER HATCHERY	1990	40000	E EGGS	PEI, AQUA HEALTH (VACCINE DEV)				TO BE DESTROYED
1008	BC, BIG QUALICUM HATCHERY	1991	40000	E EGGS	PEI, AQUA HEALTH (VACCINE RESEARCH)				TO BE DESTROYED
ONCORHYNCHUS MYKISS (RAINBOW TROUT)									
	ONT, RAINBOW SPRINGS HATCHERY	1986	50000	EGGS	PEI, GLYNDE RIVER AQUACULTURE				BREADALBANE (AQUACULTURE)
7004	ONT, RAINBOW SPRINGS HATCHERY	1987	50000	FING	PEI, SILVER SEA AQUACULTURE				LITTLE YORK (AQUACULTURE)
7007	ONT, AQUAFARMS CANADA	1987	25000	FING	PEI, BROOKVALLEY MARINE FARMS				SOURIS (AQUACULTURE)
7003	ONT, RAINBOW SPRINGS HATCHERY	1987	100000	EGGS	PEI, GLYNDE RIVER AQUACULTURE				BREADALBANE (AQUACULTURE)
7002	ONT, RAINBOW SPRINGS HATCHERY	1987	100000	EGGS	PEI, INTEGRATED AQUATICS SYSTEMS				BROOKVALE (AQUACULTURE)
7011	ONT, RAINBOW SPRINGS HATCHERY	1987	75000	EGGS	PEI, GLYNDE RIVER AQUACULTURE				BREADALBANE (AQUACULTURE)
7010	ONT, VAN AQUA INC	1987	250000	EGGS	PEI, BROOKVALLEY MARINE FARMS				SOURIS (AQUACULTURE)
7009	QUE, PISCICULTURE ALLEGHANYS	1987	15000	FING	PEI, EDWARD MURPHY				KENSINGTON (AQUACULTURE)
7008	WA, BEITEYS RESORT	1987	200000	FING	PEI, INTEGRATED AQUATICS SYSTEMS				BROOKVALE (AQUACULTURE)
7001	ONT, RAINBOW SPRINGS HATCHERY	1987	50000	EGGS	PEI, GLYNDE RIVER AQUACULTURE				BREADALBANE (AQUACULTURE)
7005	ONT, RAINBOW SPRINGS HATCHERY	1987	50000	FING	PEI, BROOKVALLEY MARINE FARMS				SOURIS (AQUACULTURE)
7012	ONT, AQUAFARMS CANADA	1988	30000	EGGS	PEI, BROOKVALLEY MARINE FARMS				SOURIS (AQUACULTURE)
8001	QUE, PISCICULTURE ALLEGHANYS	1988	50000	FING	PEI, EDWARD MURPHY (REARING)				HUNTER R (AQUACULTURE)
8002	WA, BEITEYS RESORT	1988	200000	EGGS	PEI, BROOKVALLEY MARINE FARMS				FORTUNE (AQUACULTURE)
8003	WA, BEITEYS RESORT	1988	250000	EGGS	PEI, INTEGRATED AQUATICS (REARING)				BROOKVALE (AQUACULTURE)
8004	ONT, RAINBOW SPRINGS HATCHERY	1988	125000	EGGS	PEI, GLYNDE RIVER AQUACULTURE				GLYNDE R (AQUACULTURE)
8005	ONT, RAINBOW SPRINGS HATCHERY	1988	25000	TR EGGS	PEI, GLYNDE RIVER AQUACULTURE				GLYNDE R (AQUACULTURE)
9001	ONT, RAINBOW SPRINGS HATCHERY	1989	25000	FING	PEI, DOVER FISH HATCHERY				DOVER (AQUACULTURE)
9002	ONT, RAINBOW SPRINGS HATCHERY	1989	43500	E EGGS	PEI, DOVER FISH HATCHERY				DOVER (AQUACULTURE)
9003	ONT, RAINBOW SPRINGS HATCHERY	1989	68500	E EGGS	PEI, BROOKVALLEY MARINE FARMS				SOURIS (AQUACULTURE)
9004	ONT, RAINBOW SPRINGS HATCHERY	1989	20000	E EGGS	PEI, AQUA HEALTH (VACCINE DEV)				TO BE DESTROYED
9005	WA, BEITEYS RESORT	1989	24384	E EGGS	PEI, AQUA HEALTH (VACCINE DEV)				TO BE DESTROYED
9009	ONT, RAINBOW SPRINGS HATCHERY	1989	75000	E EGGS	PEI, BROOKVALLEY MARINE FARMS				SOURIS (AQUACULTURE)
9010	ONT, RAINBOW SPRINGS HATCHERY	1989	10000	E EGGS	PEI, AQUA HEALTH (VACCINE DEV)				TO BE DESTROYED
0007	ONT, RAINBOW SPRINGS HATCHERY	1989	10000	E EGGS	PEI, AQUA HEALTH (VACCINE DEV)				TO BE DESTROYED
0012	ONT, RAINBOW SPRINGS HATCHERY	1990	10000	E EGGS	PEI, AQUA HEALTH (VACCINE DEV)				TO BE DESTROYED
0001	ONT, RAINBOW SPRINGS HATCHERY	1990	50000	TR EGGS	PEI, DOVER FISH HATCHERY				DOVER (AQUACULTURE)
0002	ONT, RAINBOW SPRINGS HATCHERY	1990	165100	E EGGS	PEI, DOVER FISH HATCHERY				DOVER (AQUACULTURE)
0003	ONT, RAINBOW SPRINGS HATCHERY	1990	50000	TR EGGS	PEI, DOVER FISH HATCHERY				DOVER (AQUACULTURE)
0004	ONT, RAINBOW SPRINGS HATCHERY	1990	200000	E EGGS	PEI, DOVER FISH HATCHERY				DOVER (AQUACULTURE)
0005	ONT, RAINBOW SPRINGS HATCHERY	1990	100000	E EGGS	PEI, DOVER FISH HATCHERY				DOVER (AQUACULTURE)
0006	WA, BEITEYS RESORT	1990	20000	E EGGS	PEI, AQUA HEALTH (VACCINE DEV)				CHARLOTTETOWN (DESTROYED)
1001	QUE, PISCICULTURE ALLEGHANYS	1991	25000	E EGGS	PEI, BROOKVALLEY MARINE FARMS				SOURIS (AQUACULTURE)
1002	WA, BEITEYS RESORT	1991	20000	E EGGS	PEI, AQUA HEALTH (VACCINE RESEARCH)				TO BE DESTROYED
1003	QUE, PISCICULTURE ALLEGHANYS	1991	50000	E EGGS	PEI, DOVER FISH HATCHERY				DOVER (AQUACULTURE)
1004	NB, GREENACRES TROUT HATCHERY	1991	4000	FING	PEI, AQUA HEALTH (VACCINE RESEARCH)				TO BE DESTROYED
1005	QUE, PISCICULTURE ALLEGHANYS	1991	10000	FING	PEI, DOVER FISH HATCHERY				DOVER (AQUACULTURE)

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1991

PRINCE EDWARD ISLAND (Continued)

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)	TRANSFERS YEAR	NUMBER	STAGE	SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	FINAL DISPOSITION LOCATION (PURPOSE)
ONCORHYNCHUS MYKISS (RAINBOW TROUT) - CONTINUED									
1006	NB,GREENACRES TROUT HATCHERY	1991	1500	FING	PEI, AQUA HEALTH (VACCINE RESEARCH)				TO BE DESTROYED
1007	NB, SEA FARMS (CANADA)	1991	40000	E EGGS	PEI, AQUA HEALTH (VACCINE RESEARCH)				TO BE DESTROYED
1019	NB, GREENACRES TROUT HATCHERY	1992	35000	E EGGS	PEI, BROOKVALLEY MARINE FARMS				SOURIS (AQUACULTURE)
SALVELINUS ALPINUS (ARCTIC CHAR)									
7013	MAN, ROCKWOOD HATCHERY	1987	5000	EGGS	PEI, ATL VETERINARY COLLEGE				
8006	NB, HUNTSMAN MARINE LAB	1988	500	FING	PEI, INTEGRATED AQUATICS (REARING)				BROOKVALE (AQUACULTURE)
9006	NB, HML (FRASER R, LABRADOR)	1989	50000	E EGGS	PEI, IAS/BROOKVALE (QUARANTINE)	1989	45600	FING	BROOKVALE (AQUACULTURE)
9008	MAN, ROCKWOOD H (FRASER R, LABRADOR)	*1989	3000	E EGGS	PEI, DOVER FISH HATCHERY				DOVER (BROODSTOCK DEV)
0018	NB, PURTILL B FISH	1989	12000	E EGGS	PEI, IAS (EXP QUARANTINE PROGRAM)	1990	131397	FING	BROOKVALE (AQUACULTURE)
0019	NB, PURTILL B FISH	1990	88000	E EGGS	PEI, IAS (EXP QUARANTINE PROGRAM)				- RELEASED FROM
0020	NB, PURTILL B FISH	1990	15000	SAC FRY	PEI, IAS (EXP QUARANTINE PROGRAM)				QUARANTINE
0021	NB, PURTILL B FISH	1990	62000	SAC FRY	PEI, IAS (EXP QUARANTINE PROGRAM)				
SALVELINUS FONTINALIS (BROOK TROUT)									
7006	ONT, WILDCAT TROUT FARM	1987	20000	JUV	PEI, GLYNDE RIVER AQUACULTURE				BREADALBANE (AQUACULTURE)
SALMO SALAR (ATLANTIC SALMON)									
8007	NB, HML (ST JOHN CULTURED)	1988	45000	FRY	PEI, ATL VET COLLEGE (REARING)				(AQUACULTURE)
9007	NB, BOF CAGE SITE (ST JOHN R)	1989	50000	E EGGS	PEI, IAS/BROOKVALE (QUARANTINE)	1989	18300	FING	BROOKVALE (AQUACULTURE)
9011	NB, SEA FARMS CANADA	1989	2000	FRY	PEI, ATL VET COLLEGE (RESEARCH)				TO BE DESTROYED
9012	NB, HUNTSMAN MARINE LAB	1989	1500	PYP	PEI, ATL VET COLLEGE (RESEARCH)				TO BE DESTROYED
9013	NB, SEA FARMS CANADA	1989	10000	E EGGS	PEI, AQUA HEALTH (VACCINE DEV)				TO BE DESTROYED
9014	NS, MERSEY FCS	1989	7500	FING	PEI, AQUA HEALTH (VACCINE DEV)				TO BE DESTROYED
9015	SCO, PRIVATE FACILITY	1989	10000	E EGGS	PEI, AQUA HEALTH (VACCINE DEV)				TO BE DESTROYED
9016	NOR, PRIVATE AQUACULTURE FACILITY	1989	10000	E EGGS	PEI, AQUA HEALTH (VACCINE DEV)				TO BE DESTROYED
0008	NS, COLDBROOK FCS	1989	20000	E EGGS	PEI, AQUA HEALTH (VACCINE DEV)				TO BE DESTROYED
0022	NB, MIRAMICHI FCS (MIRAMICHI)	1989	70000	G EGGS	PEI, DFO/CARDIGAN FCS (QUAR)				PEI (ENHANCEMENT PROGRAMS)
0010	NB, SEA FARMS CANADA	1990	15000	E EGGS	PEI, AQUA HEALTH (VACCINE DEV)				TO BE DESTROYED
0011	NB, SEA FARMS CANADA	1990	400	FING	PEI, AQUA HEALTH (VACCINE DEV)				TO BE DESTROYED
0013	SCO, MARINE HARVEST LIMITED	1990	10000	E EGGS	PEI, AQUA HEALTH (VACCINE DEV)				TO BE DESTROYED
0014	NOR, JAKTA FISKEOPPDRETT AS	1990	10000	E EGGS	PEI, AQUA HEALTH (VACCINE DEV)				TO BE DESTROYED
0015	ME, KENNEBEC AQUACULTURE	1990	2000	PARR	PEI, AQUA HEALTH (RESEARCH)				TO BE DESTROYED
0016	NB, SEA FARMS CANADA	1990	2050	FING	PEI, AQUA HEALTH (VACCINE DEV)				TO BE DESTROYED
0017	NB, SEA FARMS CANADA	1990	393	P SMOLT	PEI, AQUA HEALTH (RESEARCH)				TO BE DESTROYED
0023	NB, MIRAMICHI FCS (MIRAMICHI/NW)	1990	55000	G EGGS	PEI, DFO/CARDIGAN FCS (QUAR)				PEI (ENHANCEMENT PROGRAMS)
0024	NS, COLDBROOK FCS	1990	20000	E EGGS	PEI, AQUA HEALTH (VACCINE DEV)				TO BE DESTROYED
0025	NB, SALMON DEMONSTRATION FARM	1990	250	1 Kg	PEI, ATL VET COLLEGE (RESEARCH)				TO BE DESTROYED
1009	ME, KENNEBEC AQUACULTURE	1991	2500	PARR	PEI, AQUA HEALTH (VACCINE RESEARCH)				TO BE DESTROYED

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1991

PRINCE EDWARD ISLAND (Continued)

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)	TRANSFERS YEAR	NUMBER	STAGE	SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	FINAL DISPOSITION LOCATION (PURPOSE)
SALMO SALAR (ATLANTIC SALMON) - CONTINUED									
1010	NB, SEA FARMS (CANADA)	1991	1600	PARR	PEI, AQUA HALTH (VACCINE RESEARCH)				TO BE DESTROYED
1011	NB, SEA FARMS (CANADA)	1991	5000	PARR	PEI, AQUA HEALTH (VACCINE RESEARCH)				TO BE DESTROYED
1012	ME, KENNEBEC AQUACULTURE	1991	6000	PARR	PEI, AQUA HEALTH (VACCINE RESEARCH)				TO BE DESTROYED
1013	NS, COLDBROOK FCS	1991	20000	E EGGS	PEI, AQUA HEALTH (VACCINE RESEARCH)				TO BE DESTROYED
1014	NB, SEA FARMS (CANADA)	1991	350	SMOLT	PEI, AVC (FISH HEALTH RESEARCH)				TO BE DESTROYED
1015	NB, SALMON DEMONSTRATION FARM	1991	350	P SMOLT	PEI, AVC (FISH HEALTH RESEARCH)				TO BE DESTROYED
1016	NB, SALMON DEMONSTRATION FARM	1991	60	ADULT	PEI, AVC (FISH HEALTH RESEARCH)				TO BE DESTROYED
1017	NH, NEW ENG FISH FARM ENT	1991	19000	FRY	PEI, BROOKVALLEY MARINE FARMS				SOURIS (BROODSTOCK DEV)
1018	NB, BRIDEN CONSULTANTS LTD	1991	10000	FRY	PEI, BROOKVALLEY MARINE FARMS				SOURIS (BROODSTOCK DEV)

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1991

QUEBEC

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)	YEAR	NUMBER	STAGE	TRANSFERS SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	FINAL DISPOSITION LOCATION (PURPOSE)
COREGONUS CLUPEAFORMIS (LAKE WHITEFISH)									
8004	ONT, WHITELAKE HATCHERY	1988	700	FING	LAVAL UNIVERSITY (RESEARCH)	P			TO BE DESTROYED
COREGONUS LAVARETUS (LAKE WHITEFISH)									
7003	FIN, (VAASA)	1987	150	G EGGS	LAVAL UNIVERSITY (RESEARCH)	P			TO BE DESTROYED
ONCORHYNCHUS KISUTCH (COHO SALMON)									
7001	BC, ROSEWALD CREEK HATCHERY	1987	150	JUV	LAVAL UNIVERSITY (RESEARCH)	P			TO BE DESTROYED
ONCORHYNCHUS MYKISS (RAINBOW TROUT)									
7002	ONT, AQUAFARMS CANADA	1987	50000	EGGS	QUE, BILL NOWELL				(AQUACULTURE)
8001	PEI, GLYNDE RIVER AQUACULTURE	1988	80000	FING	QUE, FERME ST MATHIEU				(AQUACULTURE-MARKET)
8002	ONT, REDBOW FARMS	1988	80000	FING	QUE, FERME ST MATHIEU				(AQUACULTURE-MARKET)
8003	ONT, ABERFOYLE FISHERIES	1988	80000	FING	QUE, FERME ST MATHIEU				(AQUACULTURE-MARKET)
8005	ONT, SPRING VALLEY HATCHERY	1988	600000	EGGS	QUE, FERME ST MATHIEU				(AQUACULTURE-MARKET)
9007	ONT, AQUAFARMS CANADA (DOMESTIC)	1988	100000	EGGS	QUE, FERME ST MATHIEU				(AQUACULTURE-MARKET)
9003	ONT, SPRING VALLEY H (DOMESTIC)	1989	100000	FRY	QUE, FERME ST MATHIEU				(AQUACULTURE-MARKET)
9008	ONT, SPRING VALLEY H (DOMESTIC)	1989	1000000	EGGS	QUE, FERME ST MATHIEU				(AQUACULTURE-MARKET)
0001	ONT, WILDCAT TROUT FARM	1990	40000	FRY	QUE, SALMONID INC/HATCHERY				(AQUACULTURE)
1001	ONT, RAINBOW SPRING HATCHERY	1991	1000	FRY	QUE, ANALEX INC/LAB				BIOASSAY
1002	ONT, RAINBOW SPRING HATCHERY	1991	1000	FRY	QUE, CONSULTANTS BEAK LTEE/LAB				BIOASSAY
1003	ONT, RAINBOW SPRING HATCHERY	1991	1000	FRY	QUE, LB. CENTRE ST-LAURENT				BIOASSAY
SALMO SALAR (ATLANTIC SALMON)									
0005	NB, SEA FARMS, DIGDEGUASH	1990	?	SMOLTS	QUE, BAIE DES CHALEURS AQC				(AQUACULTURE)
1004	NB, KELLY COVE BROODSTOCK	1991	60000	EGGS	QUE, BAIE DES CHALEURS AQC				(AQUACULTURE)
SALVELINUS ALPINUS (ARCTIC CHAR)									
9002	MAN, ROCKWOOD HATCHERY (WILD)	1989	20000	FRY	QUE, INRS/RIMOUSKI (RESEARCH)				
9005	MAN, ROCKWOOD HATCHERY (WILD)	1989	5000	EGGS	QUE, J P THONNEY HATCHERY				(AQUACULTURE)
9006	MAN, ROCKWOOD HATCHERY (WILD)	1989	5000	EGGS	QUE, RESERCE LA PETITE NATION				(AQUACULTURE)
0002	BC, SUN VALLEY TROUT FARM	1990	15000	EGGS	QUE, PISCICULTURE ALLEGHANYS				
0003	BC, SUN VALLEY TROUT FARM	1990	12000	EGGS	QUE, INRS/RIMOUSKI (RESEARCH)				
0004	MAN, ROCKWOOD HATCHERY	1990	15000	EGGS	QUE, MAPA (RESEARCH)				
1005	NB, GREENACRES TROUT HATCHERY	1991	3000	EGGS	QUE, INSTITUT TECHNOLOGIE AGRICOLE				RESEARCH
1006	NB, GREENACRES TROUT HATCHERY	1991	15000	EGGS	QUE, PISCICULTURE ALLEGHANYS				(AQUACULTURE)
1007	MAN, WILDWOOD TROUT FARM	1991	13000	EGGS	QUE, MAPA (RESEARCH)				RESEARCH

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1991

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)	TRANSFERS						FINAL DISPOSITION LOCATION (PURPOSE)
		YEAR	NUMBER	STAGE	SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	
SALVELINUS FONTINALIS (BROOK TROUT)									
9001	ONT, THISTLE SPRINGS FARM (DOMESTIC)	1989	2000	YEAR	QUE, CENTRE DE PECHE BLAINVILLE				(POND FISHING)
9004	ME, PHILLIPS HATCHERY (DOMESTIC)	1989	10000	FRY	QUE, (HOLDING PRIOR TO STOCKING ?)	1989	10000	FRY	SJR, MAINE (STOCKING)

SUMMARY OF SALMONID INTRODUCTIONS AND TRANSFERS, 1986-1991

RHODE ISLAND

FILE	ORIGINAL SOURCE LOCATION (STOCK/STRAIN)	TRANSFERS YEAR	NUMBER	STAGE	SPONSOR/FACILITY (PURPOSE)	YEAR	NUMBER	STAGE	FINAL DISPOSITION LOCATION (PURPOSE)
ONCORHYNCHUS MYKISS (RAINBOW TROUT)									
6001	WA, TROUT LODGE (UNKNOWN)	1986	150000	EGGS	RI,	P1988?		2+	STATEWIDE (STOCKING)
7001	WA, TROUT LODGE (UNKNOWN)	1987	150000	EGGS	RI,	P1989?		2+	STATEWIDE (STOCKING)

ANNEX 5

NORTH AMERICAN COMMISSION

NAC(92)19

DRAFT PROTOCOLS FOR THE INTRODUCTION AND TRANSFER OF SALMONIDS

by

NAC/NASCO Scientific Working Group
on Salmonid Introductions and Transfers

NAC(92)19

DRAFT PROTOCOLS FOR THE INTRODUCTION AND TRANSFER OF SALMONIDS BY NAC/NASCO SCIENTIFIC WORKING GROUP ON SALMONID INTRODUCTIONS AND TRANSFERS

INTRODUCTION:

The North American Commission (NAC) of the North Atlantic Salmon Conservation Organization (NASCO) recognizes the potential for adverse fish health, genetic and ecological effects on Atlantic salmon stocks via introductions and transfers of salmonids. Interest is increasing to introduce or transfer non-indigenous species, stocks and/or strains of salmonids for aquaculture, restoration of historic populations and/or improvement of recreational fisheries. These introductions or transfers pose an undue and irreversible risk to wild Atlantic salmon populations if adequate safeguards are not taken. The NAC, at its ninth annual meeting, June 1992, adopted protocols and guidelines for the introduction and transfer of salmonids, as contained in this report, for use in the North American Commission Area. The fundamental objectives of these protocols are:

(a) To minimize the risk of introduction and spread of infectious disease agents (fish health);

(b) To prevent the reduction in genetic variance and prevent the introduction of non-adaptive genes to wild Atlantic salmon populations (genetics); and

(c) To minimise the intra- and interspecific impacts of introductions and transfers on Atlantic salmon stocks (ecology).

This Report is divided into four parts: Part I provides a brief systematic summary of the Fish Health, Genetic, and Ecological Protocols, which are detailed in Part II, Part III, and Part IV respectively. Part I also introduces a Zoning concept for application of the protocols.

The standards adopted are considered minimal. Agencies may upgrade these if there is scientific justification, or if management needs to have greater assurance that biological characteristics of the current population will be conserved and protected.

These protocols will be reviewed every two years and amended as necessary by the contracting Parties.

PART I

SUMMARY OF PROTOCOLS BY ZONE FOR INTRODUCTIONS AND TRANSFERS OF SALMONIDS IN THE NORTH AMERICAN COMMISSION AREA

by

NAC/NASCO Scientific Working Group on

Salmonid Introductions and Transfers

Members

USA

D. Goldthwaite (Co-chairman)
T. Spurr

Canada

R. Porter (Co-chairman)
T. Carey
R. Cutting

1. ZONING OF RIVER SYSTEMS

The NAC has adopted the concept of Zoning for application of these protocols to the NAC Area. Three zones have been designated based on the degree of degradation or manipulation that has occurred on the wild Atlantic salmon populations (Figure 1). The NAC recognizes that Atlantic salmon populations have been variously affected by human activities. These activities include over-harvesting, selective fishing, habitat degradation, mixing of stocks, introduction of non-indigenous fish species, and spreading fish diseases. Atlantic salmon stocks in northern areas (Zone 1) have generally been least affected, and those stocks in the southern area (Zone III) have been most affected by humans.

In order to allow operational flexibility within a Zone, river systems have been classified as Class I, II, or III rivers. Generally, rivers will have the same classification as the Zone in which it is in. For example, in Zone II, river systems will be mainly categorized as Class II. However, a river system may be assigned a higher classification than the Zone in which it is located (e.g., Class I river in Zone II) to allow additional protection for valuable Atlantic salmon stocks. In extenuating circumstances and if a river is sufficiently isolated from other rivers, it is acceptable to have a river with a lower classification than the Zone in which it is located (e.g., Class III rivers within Zone II or Class II rivers in Zone I).

All rivers are presently classified at the same level as the Zone designation. Member countries wishing to change the location of Zone boundaries or to have rivers of a lower classification within a Zone should submit their recommendations, with scientific justifications, to NAC.

2. DESCRIPTION OF ZONES

Zone I: Geographic Area: Northern Quebec, Labrador, Newfoundland (west coast) and Anticosti Island.

Rivers are classified primarily as Class I. They are pristine rivers with no significant man-made habitat alterations, no history of transfers of fish into the watersheds, and no fish rearing operations in the watersheds.

Zone II: Geographic Area: Quebec rivers flowing into Gulf of St. Lawrence south of Pte. des Monts, Gaspé region of Quebec, Magdalen Islands, Prince Edward Island, New Brunswick, Nova Scotia, Newfoundland (except west coast), St. Pierre and Miquelon Islands, and State of Maine east of Rockland.

Rivers are classified primarily as Class II watersheds in which one or more of the following conditions occur: the habitat has been altered; non-indigenous wild or hatchery-reared Atlantic salmon have been released; or aquaculture has been conducted in marine cage culture. Other species may be present in land-based facilities. Introduced species such as rainbow trout would be treated as indigenous if a population has been established for ten or more years.

Zone III: Geographic Area: Lake Ontario, southern Quebec draining to St. Lawrence River, State of Maine west of Rockland, New Hampshire, New York, Connecticut, Massachusetts, New Jersey, Rhode Island, and Vermont.

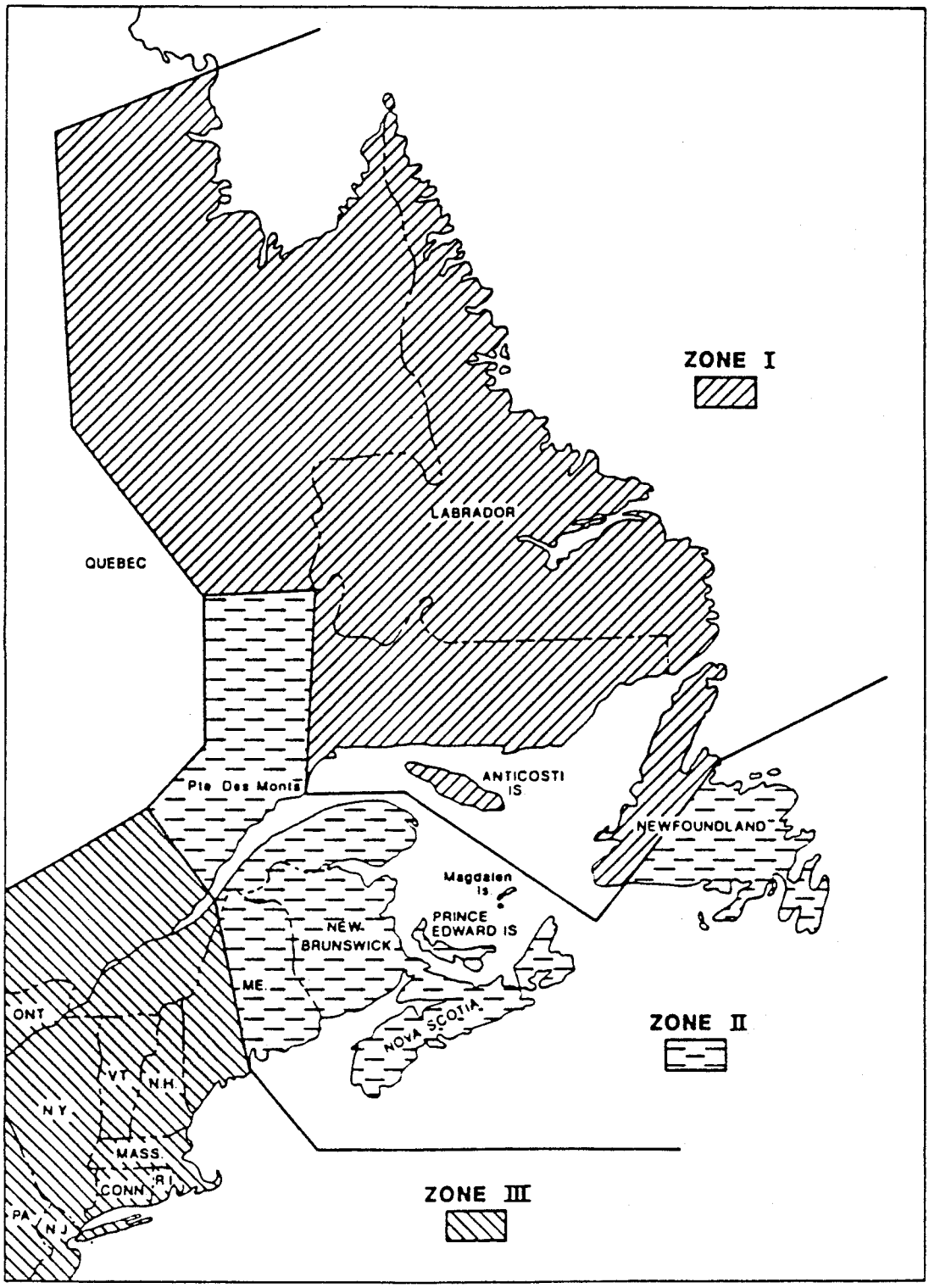

Figure 1. Map of eastern Canada and northeastern USA showing the 3 zones proposed for implementation of protocols.

Rivers are classified primarily as Class III watersheds in which habitats have been altered, or where fish communities are destabilized, or exotic species are present.

3. PROTOCOLS

3.1 Protocols Applicable to All Three Zone Classifications

(1) Reproductively viable Atlantic salmon of European origin (strain), including Iceland origin, are not to be released or used in aquaculture in the North American Commission Area. This ban on importation or use of European-origin Atlantic salmon will remain in place until scientific information confirms that the risk of adverse genetic effects on wild Atlantic salmon stocks is minimal.

(2) No live salmonid fishes, fertilized eggs, gametes, or fish products are to be imported from IHN enzootic areas, unless sources have an acceptable history of disease testing demonstrating the absence of IHN (e.g. Great Lakes Fish Health Disease Committee protocol requirements). IHN infected areas currently include State of Washington, Oregon, Idaho, California, Alaska, British Columbia, Japan, and parts of Taiwan and France.

(3) Prior to any transfer of eggs, juveniles or brood stock a minimum of three health inspections of the donor facility will be undertaken during the two-year period immediately preceding the transfer; and the inspections must reveal no evidence of either emergency or restricted fish pathogens in the donor population (see Part II).

(4) Prior to any movement of non-native fishes into a river system or rearing site inhabited by Atlantic salmon the agency with jurisdiction shall review and evaluate fully the potential for interspecific competition which would adversely impact on the productivity of wild Atlantic salmon populations. Such evaluations should be undertaken, as far as possible, with information on the river in which the introduction is to occur and from similar situations.

(5) Hatchery rearing programs to support: introduction, re-establishment, rehabilitation and enhancement of Atlantic salmon should try to comply with the following measures:

a. Use only F1 progeny from wild stocks;
b. Derive broodstock from all phenotype age-groups and the entire run of a donor population;
c. Avoid selection of the "best" fish during the hatchery rearing period; and
d. During spawning, make only single pair mating from a broodstock population of no less than 100 parents. Should the number of one sex be fewer than 50, the number of spawners of the other sex should be increased to achieve a minimum N of 100.

3.2 Protocols Applicable to Zone I

Zone I consists of Class I watersheds where every effort must be made to maintain the existing genetic integrity of Atlantic salmon stocks. The following summary protocols apply:

3.2.1 General within Zone I

- No Atlantic salmon reared in a fish culture facility are to be released into a Class I river, or another river which has its estuary less than 30km from a Class I river, or a marine site less than 30km from a Class I river (distances would be measured in a straight line(s) from headland to headland);

- No non-indigenous fish species or Atlantic salmon stock is to be introduced into a Class I watershed.

3.2.2 Rehabilitation

- Fisheries management techniques will be used to ensure sufficient spawners such that spawning escapement exceeds a minimum target level to maintain an effective breeding population;

- Habitat that becomes degraded will be restored to the greatest extent possible.

3.2.3 Establishment or re-establishment of Atlantic salmon in a river or part of a watershed where there are no salmon

- Use transfers of adults or juvenile salmon from the residual population in other parts of the watershed;

- A nearby salmon stock which has similar phenotypic characteristics to the lost stock could be transferred if there is no residual stock and provided an effective breeding population is maintained in the donor watershed (see Section 3.1 (5));

- If the biological characteristics of the original stock are not known or there was no previous stock in the recipient watershed, then transfer broodstock or early life stages from a nearby river having similar habitat characteristics.

3.2.4 Aquaculture

(i) Rearing in marine or freshwater cages, or land-based facilities:

- Rearing of fish at locations in the marine environment, in a Class I river, or in a watershed with estuary less than 30km (measured in a straight line(s) headland to headland) from the estuary of a Class I river is restricted to land-based facilities using reproductively sterile fish, or indigenous fish species such as brook trout or arctic char;

- Rearing of fish at locations in the marine environment, or in a watershed with estuary greater than 30km (measured in a straight line(s) headland to headland) from Class I rivers is permitted in either sea cages or land-based facilities with reproductively sterile fish or with brook trout or arctic char provided that the risk of adverse effects on wild Atlantic salmon stocks is minimal.

(ii) Commercial ranching:

- No commercial ranching of salmonids is permitted within 30km of the estuary of a Class I river (measured in a straight line(s) headland to headland);

- At locations greater than 30km from the estuary of a Class I river, reproductively sterile Atlantic salmon, reproductively viable brook trout or Arctic char, and reproductively sterile non-indigenous species may be ranched provided that the risk of adverse effects on wild Atlantic salmon stocks are minimal.

3.3 Protocols Applicable to Zone II

3.3.1 General within Zone II

- Reproductively viable non-indigenous species and reproductively viable Atlantic salmon stocks non-indigenous to the NAC area are not to be introduced into watersheds or into the marine environment of Zone II;

- Restoration, enhancement and aquaculture activities are permitted in the freshwater and marine environments.

3.3.2 Rehabilitation

- The preferred methods are: to improve degraded habitat and ensure escapement of sufficient spawners through fisheries management;

- If further measures are required, use residual stocks for rehabilitation and enhancement. If the residual stock is too small, select a donor stock having similar life history and biochemical characteristics from a tributary or nearby river;

- Stocking of hatchery-reared smolts is preferred, to reduce competition with juveniles of the natural stocks.

3.3.3 Establishment or re-establishment into rivers having no Atlantic salmon populations

- To establish an Atlantic salmon stock, use a stock from a nearby river having similar stream habitat characteristics;

- If re-establishing a stock, use a stock from a nearby river which has similar biological characteristics to the original stock;

- It is preferable to stock rivers with broodstock or early life history stages (eggs and fry);

- If eggs are spawned artificially, use single pair matings and optimize the effective number of parents (see Section 3.1 (5)).

3.3.4 Aquaculture

(i) Rearing in marine or freshwater cages, or land-based facilities:

- It is important to apply methods which minimize escapees;

- Develop domesticated broodstock using local stocks; or, if local stocks are limited, use nearby stocks;

- Reproductively viable non-indigenous species may only be introduced into land-based facilities where risk of escapement is minimal;

- Non-indigenous species may be introduced into the wild or used in cage rearing operations if the fish are reproductively sterile and the risk of adverse ecological interactions is minimal.

(ii) Commercial ranching:

- Commercial Atlantic salmon ranching will only be permitted at release sites located greater than 20km from the estuary of a Class II river (measured in a straight line(s) headland to headland) and it is demonstrated that the activity will not negatively affect wild Atlantic salmon stocks;

- Non-indigenous species or distant national Atlantic salmon stocks may be used if the fish are reproductively sterile and the risk of adverse ecological interactions is minimal.

3.4 Protocols Applicable to Zone III

3.4.1 General within the Zone

- Indigenous and non-indigenous salmonid and non-salmonid [except reproductively viable Atlantic salmon stocks non-indigenous to the NAC Area] fishes may be considered for introduction or transfer if fish health and genetic protocols are followed and negative impacts on Atlantic salmon can be shown to be minimal using careful ecological impact evaluation.

3.4.2 Rehabilitation

- Habitat quality should be upgraded wherever possible;

- Rebuilding stocks can be achieved by controlling exploitation and by stocking cultured fish.

3.4.3 Establishment or re-establishment

- Transfer source stocks from nearest rivers having similar habitat characteristics;

- Stock with juvenile stages (eggs, fry and/or parr). If eggs are spawned artificially, use single pair matings and optimize the effective number of parents (Section 3.1 (5)).

3.4.4 Aquaculture

(i) Rearing in marine or freshwater cages, or land-based facilities:

- Use of local stocks is preferred but non-indigenous stocks may be cultured;

- Marine cage culture can be widely practised; but, preferred locations are at least 20km from watersheds managed for salmon production (measurements are by straight lines from headland to headland);

- Culture of non-indigenous species in land-based facilities on Class III watersheds is permitted in adequately controlled facilities where risk of escapement is minimal.

(ii) Commercial ranching:

- Commercial ranching of salmonids is permitted if it is demonstrated that the activity will not negatively affect Atlantic salmon rehabilitation or enhancement programs or the development of wild Atlantic salmon stocks.

4. GUIDELINES FOR APPROVAL OF INTRODUCTIONS AND TRANSFERS

Both proponents and agencies responsible for managing salmonids have a responsibility for ensuring that risk of adverse effects on Atlantic salmon stocks from introductions and transfers of salmonids and other fishes is low. Reasonable laws to protect wild stocks should be enacted by each agency, as necessary. Resource management agencies will determine protection for habitats with Atlantic salmon potential.

4.1 Responsibility of Proponent

The proponent must submit an application for introduction or transfer of fishes to the permit-issuing agency. This request must provide a full justification for the introduction or transfer such that a complete evaluation will be possible prior to issuance of a permit. The list of information to be included in the justification for introductions and transfers is in Section 4.4, below. The lead time required for notice and justification of introductions and transfers will be determined by the permit-issuing agency. Proponents should be aware of the protocols established for introductions and transfers.

4.2 Responsibility of Government Agencies Having the Authority to Issue Permits

These agencies shall be those entities having the responsibility for fishery management within the receiving area. The responsibilities of the agencies shall include:

(1) Establish, maintain, and operate a permit system and inventory for all introductions and transfers of fishes.

(2) Enact regulations required to control the introductions and transfers of fishes as per established protocols.

(3) Establish a formal scientific evaluation process to review all applications (private and government agencies) for the introduction and transfer of all species and recommend conditional acceptance or rejection of the proposed introductions and transfers based on the potential impact on the productivity of Atlantic salmon.

(4) Within the Zones each agency may be more restrictive in classifying individual watersheds. Rarely, a less restrictive classification may be applied to an individual watershed if its estuary is at least 30km in Zone I, or 20km in Zone II (measured in straight lines headland to headland) from a watershed with a higher classification.

(5) Annually, submit to the NAC Scientific Working Group the results of the permit submission/review process, and a list of introductions and/or international transfers proposed for their jurisdiction.

(6) Prevent the release of fishes which will adversely affect the productivity of wild Atlantic salmon stocks.

4.3 Responsibilities of the NAC/Scientific Working Group on the Salmonid Introductions and Transfers

(1) Maintain an inventory of all introductions of salmonids, transfers of salmonids from IHN-infected areas, and importation of salmonids across national boundaries into the Commission Area.

(2) Review and evaluate all introductions and transfers referenced in Section 4.3 (1) above, in relation to the NAC protocols and report the results to the North American Commission.

4.4 Preparation of Proposals

The following information is required, by the permit issuing agency, with applications involving introductions and transfers of salmonids, except for restocking into source river. This information will be used to evaluate the risk of adverse effects on Atlantic salmon stocks.

(1) Name the species, strain and quantity to be introduced or transferred, and include:

a. Time of introduction or transfer.
b. List anticipated future introductions or transfers.
c. List previous introductions and/or transfers.

(2) Area, place, river or hatchery from which the fish will be obtained.

(3) Proposed place of release and any interim rearing sites.

(4) Disease status of donor hatchery, river or other location from which fish are obtained.

(5) Disease status of recipient facility or stream (where available).

(6) Objectives of the introduction or transfer and the rationale for not using local stock or species.

(7) For non-indigenous species, provide the available information on the proposed species' life history, preferred habitat, potential parasites and disease agents, and potential for competition with Atlantic salmon in the recipient waters or nearby waters.

(8) Information on similar transfers or introductions.

(9) Proposed procedure for transportation from donor to recipient site.

(10) List measures to be taken to prevent transmission of disease agents and to reduce the risk of escape of fish.

(11) Species composition at proposed site of introduction and adjacent rivers.

(12) Climatic regime and water chemistry, including pH of waters at the site of proposed introduction and of adjacent rivers.

(13) For indigenous species determine the life history and biological characteristics of donor stock. This would include such characteristics as run timing, time of spawning, age-at-maturity, size-at-age etc.

(14) Potential of introduced or transferred fish to disperse to nearby streams.

(15) A bibliography of pertinent literature should be appended to the proposal.

4.5 Evaluation of Proposals

The evaluation of proposals will be the responsibility of the permitting agency and will focus on the risk to Atlantic salmon production and potential production associated with the proposed introductions and/or transfers. The evaluation will be based on the classification of the recipient watershed. All requests for introduction or transfers must provide sufficient detail (Section 4.4, above) such that the potential risk of adverse effects to Atlantic salmon stocks can be evaluated.

The evaluation of potential adverse effects of fish health will consider the disease history of the donor and recipient facility and/or watershed with specific reference to the potential for transferring emergency diseases. The risk of detrimental genetic effects of introducing a non-indigenous stock into a river will be evaluated taking into consideration the phenotypic and life history characteristics of the donor stock, the biochemical information (mitochondrial/nuclear DNA and enzyme frequencies, if available), and geographic distance between donor and recipient locations. The evaluation of the risk of ecological effects on Atlantic salmon populations is more involved. Introduction of non-indigenous Atlantic salmon stocks and/or non-indigenous species will be evaluated by considering the life history and habitat requirements of the transferred fish.

The introduction of non-indigenous species poses a significant risk to the productivity of the Atlantic salmon stocks. Evaluation will be by comparison of the habitat requirement and behaviour of both the proposed introduced species and the indigenous Atlantic salmon stock at all life stages. The habitat requirements and areas of possible interactions with Atlantic salmon has been described for 14 fish species (see Part IV, Ecological Subgroup report). These can be used to provide a cursory evaluation of the life history stage at which interactions would occur. However, more detailed information on stocks and habitats in both donor and recipient locations would be required in the form of an envirogran (example is provided in Part IV). Where insufficient data are available, research will be required prior to permitting the introduction or transfer.

An outline example of the type of information which is available in the species summaries (Part IV) is presented below for rainbow trout:

(1) Conditions under which interactions will occur:

- spawning - rainbow may dig up Atlantic salmon redds;
- interaction of yearlings - compete for space;
- rainbow trout juveniles are more aggressive than juvenile Atlantic salmon in pools;
- large trout are piscivorous.

(2) Low interaction:

- in streams where Atlantic salmon do not utilize;
- salmon well established;
- aquaculture using sterile fish or land base facility.

(3) Conditions under which no interaction will occur. It would be permissible to use reproductively viable rainbow trout:

- habitat with pH less than 5.5;

- rainbow already present in recipient stream;

- disturbed ecosystems where Atlantic salmon are absent and sport fishing would be improved.

5. GLOSSARY

Applicant: See proponent.

Aquaculture: The culture or husbandry of aquatic fauna other than in research, in hobby aquaria, or in governmental enhancement activities.

Commercial ranching: The release of a fish species from a culture facility to range freely in the ocean for harvest and for profit.

Competition: Demand by two or more organisms or kinds of organisms at the same time for some environmental resource in excess of the available supply.

Containment: Characteristics of a facility which has an approved design which minimizes operator error to cause escape of fish, or unauthorized persons to release contained fish.

Diversity: All of the variations in an individual population or species.

Enhancement: The enlargement or increase in number of individuals in a population by providing access to more or improved habitats or by using fish culture facility production capability.

Exotic: See introduced species.

Fish: A live finfish.

Fish culture facility: Any fish culture station, hatchery, rearing pond, net pen, or container holding, rearing, or releasing salmonids.

Gamete: Mature germ cell (sperm or egg) possessing a haploid chromosome set and capable of formation of a new individual by fusion with another gamete.

Genetics: A branch of biology that deals with the heredity and variation of organisms and with the mechanisms by which these are effected.

Indigenous: Existing and having originated naturally in a particular region or environment.

Introduced species: Any finfish species intentionally or accidentally transported or released by Man into an environment outside its native or natural range.

Isolation: Means restricted movement of fish and fish pathogens within a facility by means of physical barriers, on-site sanitary procedures and separate water supply and drain systems and cultural equipment.

Mariculture: Aquaculture in sea water.

Native: See indigenous.

Niche: A site or habitat supplying the sum of the physical and biotic life-controlling factors necessary for the successful existence of a finfish in a given habitat.

Non-indigenous: Not originating or occurring naturally in a particular environment; introduced outside its native or natural range.

Population: A group of organisms of a species occupying a specific geographic area.

Predator: An individual that preys upon and eats live fish, usually of another species.

Proponent: A private or public group which requests permission to introduce or transfer any finfish within or between countries and lobbies for the proposal.

Quarantine: See Annex IV - Part II.

Rehabilitation: The rebuilding of a diminished population of a finfish species, using a remnant reproducing nucleus, toward the level that its environment is now capable of supporting.

Restoration: The re-establishment of a finfish species in waters occupied in historical times.

Salmonid: All species and hybrids of the Family Salmonidae covered by the AFS checklist special publication No. 12, "A list of Common and Scientific Names of Fishes from the United States and Canada".

Species: A group of interbreeding natural populations that are reproductively isolated from other groups.

Stock: Population of organisms sharing a common gene pool which is sufficiently discrete to warrant consideration as a self-perpetuating system which can be managed.

Strain: A group of individuals with a common ancestry that exhibits genetic, physiological, or morphological differences from other groups as a result of husbandry practices.

Transfer: The deliberate or accidental movement of a species between waters within its native or natural geographic range, usually with the result that a viable population results in the new locations.

Transferred species: Any finfish intentionally or accidentally transported and released within its native or natural geographic range.

PART II

PROTOCOLS ON SALMONID FISH HEALTH

by

The Fish Health Subgroup of

NAC/NASCO Scientific Working Group on

Salmonid Introductions and Transfers

Co-Chairmen

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PART III

PROTOCOLS FOR MAINTENANCE OF GENETIC DIVERSITY IN ATLANTIC SALMON

by

The Genetics Subgroup of

NAC/NASCO Scientific Working Group on

Salmonid Introductions and Transfers

Subgroup Members

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H. Booke
C. Kreuger
R. Simon

CANADA

P. Ihssen (Chairman)
J. Bailey
G. Friars
J. Ritter
R. Saunders

PART IV

PROTOCOLS TO REDUCE RISK OF ECOLOGICAL EFFECTS OF INTRODUCTIONS AND TRANSFERS OF FISHES ON ATLANTIC SALMON

by

The Ecological Subgroup of

NAC/NASCO Scientific Working Group on

Salmonid Introductions and Transfers

R.J. Gibson[1] and R.E. Cutting[2]

Department of Fisheries and Oceans

Canada

1 St John's, Newfoundland

2 Halifax, Nova Scotia

ANNEX 6

NORTH AMERICAN COMMISSION

NAC(92)18

RESPONSE FROM US/CANADA AIR QUALITY COMMITTEE

United States Department of State

Bureau of Oceans and International
Environmental and Scientific Affairs

Washington, D.C. 20520

June 2, 1992

Dr. Malcolm Windsor
Secretary
North Atlantic Salmon Conservation Organization
11 Rutland Square
Edinburgh EH1 2AS
Scotland, UK

Dear Dr. Windsor:

Thank you for your letter of April 21, 1992 on behalf of the North Atlantic Salmon Conservation Organization (NASCO), North American Commission. I have consulted with technical experts at the U.S. Environmental Protection Agency in providing you the following response to your questions regarding the expected effectiveness of the U.S. and Canadian SO2 emissions control programs.

The following information is intended to reflect our best judgments of changes likely to occur in the Atlantic salmon habitat in North America as a result of acidic deposition controls. Although these conclusions have been drawn from our interpretations of the current data, the scientific information available at this time is incomplete. As controls take effect and we are able to gather more environmental effects data, we anticipate that our answers will become more certain.

Question 1. How effective (and within what timeframe) are the SO2 emission control programs of Canada and the United States expected to be in promoting a return to naturally-occurring pH levels in affected Atlantic salmon watersheds of eastern Canada and the United States?

Answer: The reduction in total (wet + dry) sulfate deposition resulting from the combined U.S. and Canadian acid rain control programs is estimated to be approximately twenty-five per cent for southern Nova Scotia by the year 2005, when control programs are fully implemented. Reductions of greatest significance should begin between 1994 and 1997. Sensitivity studies would suggest that reductions by 1997 for southern Nova Scotia would at most be half those achieved by 2005.

Sulfur oxides emissions in the U.S. peaked around the mid-1970s and generally declined through the 1980s. This past decrease amounted to about one million tons or one-tenth of the projected, future reduction of ten million tons. Monitoring in lakes in Maine since 1981 has documented a small but statistically significant decline in sulfate levels and a small but significant increase in acid neutralizing capacity. Lake pH levels have been too variable to detect a trend.

These results suggest that reductions in SO2 emissions do result in an improvement in surface water chemistry. Mandated emission reductions are expected, therefore, to result in further improvements and recovery, although it is not likely that stream pH levels will recover completely to pre-industrial (natural) levels.

Because of the high levels of organics in small, tributary streams in Maine (and also Nova Scotia), even at low pH levels, levels of inorganic aluminum are low. Therefore, toxic effects from aluminum are probably minimal. Acidification effects on Atlantic salmon are caused primarily by low pH, and the critical life stage is apparently during the transition from yolk utilization to exogenous feeding. This is in contrast to effects of acidification on salmon in Norway where inorganic aluminum levels are higher and smolts are the most sensitive life stage. Because of these differences in aluminum chemistry, Atlantic salmon populations are adversely affected at higher pH levels in European than in North American streams.

In the United States, acidification is not currently a significant limiting factor for Atlantic salmon. Although the data are quite limited, historical records for rivers in Maine indicate no recent long-term increase in acidity. Decreased salmon counts in Maine rivers are due to factors unrelated to SO2 emissions. Mandated emissions reductions are expected to cause measurable improvement in stream chemistry over current levels, although data are not sufficient to predict with confidence the magnitude or rate of recovery that will eventually occur.

Question 2. What are the principal sources of SO2 emissions affecting the Southern Upland area of Nova Scotia, where many Atlantic salmon stocks have been eliminated as a result of pH reductions?

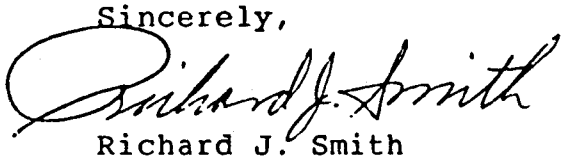
Answer: The principal emissions sources affecting the Southern Upland areas are large fossil fuel-burning electric utilities located in the U.S. and large localized Canadian emissions sources.

Thank you for your interest in coordinating NASCO's work with the U.S./Canada Air Quality Committee. Should this response result in any questions or disagreement regarding our findings, we are prepared to meet to try to resolve these issues. Perhaps we could convene a small working group of atmospheric and fisheries scientists from the U.S. and Canada to further consider your questions.

As a final note, I would like to mention that we are about to release the first U.S./Canada progress report on our efforts to implement the air quality agreement. I will be pleased to provide this to you under separate cover as soon as it becomes available.

I hope this information is useful in your discussions in Washington, D.C. next week. Please do not hesitate to contact me again if I can be of further assistance.

Sincerely,



Richard J. Smith
U.S. Co-Chair
U.S./Canada Air Quality
Committee

ANNEX 7

NORTH AMERICAN COMMISSION

NAC(92)6

CANADIAN ATLANTIC SALMON CATCHES

PRELIMINARY CATCHES OF ATLANTIC SALMON IN CANADA IN 1991 (IN KG ROUND FRESH WEIGHT)

	Grilse	Grilse	Salmon	Salmon	Total	Total
	(KG)	(%)	(KG)	(%)	(KG)	(%)
QUEBEC						
R	11,140	3.5	60,363	16.7	71,503	10.5
N	152	0.0	15,983	4.4	16,135	2.4
C	6,210	2.0	72,190	20.0	78,400	11.5
TOTAL	17,502	5.5	148,536	41.1	166,038	24.5
NFLD						
R	28,637	9.0	300	0.1	28,937	4.3
N	486	0.2	0	0.0	486	0.1
C	229,992	72.4	203,128	56.2	433,120	63.8
TOTAL	259,115	81.6	203,428	56.3	462,543	68.1
NB						
R	31,637	10.0	0	0.0	31,637	4.7
N	2,469	0.8	7,701	2.1	10,170	1.5
C	0	0.0	0	0.0	0	0.0
TOTAL	34,106	10.7	7,701	2.1	41,807	6.2
NS						
R	6,195	2.0	0	0.0	6,195	0.9
N	774	0.2	1,527	0.4	2,301	0.3
C	0	0.0	0	0.0	0	0.0
TOTAL	6,969	2.2	1,527	0.4	8,496	1.3
PEI						
R*	0	0.0	0	0.0	0	0.0
N	0	0.0	0	0.0	0	0.0
C	0	0.0	0	0.0	0	0.0
TOTAL	0	0.0	0	0.0	0	0.0
TOTAL						
R	77,609	24.4	60,663	16.8	138,272	20.4
N	3,881	1.2	25,211	7.0	29,092	4.3
C	236,202	74.3	275,318	76.2	511,520	75.3
TOTAL	317,692	100.0	361,192	100.0	678,884	100.0

R = RECREATIONAL
N = NATIVE FOOD
C = COMMERCIAL

* NO CATCH STATISTICS COLLECTED

CANADIAN ATLANTIC SALMON CATCHES IN TONNES SINCE 1960 AND NUMBERS SINCE 1982

YEAR	GRILSE (tonnes)	GRILSE (#)	SALMON (tonnes)	SALMON (#)	TOTAL (tonnes)	TOTAL (#)
1960					1,636	
1961					1,583	
1962					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	455,7005
1986	780	417,269	779	162,305	1,559	79,574
1987	833	435,799	951	203,731	1,784	639,530
1988	677	372,178	633	137,637	1,310	509,815
1989	549	304,620	590	135,484	1,139	440,104
1990	425	233,690	486	106,379	911	340,069
1991	318	176,145	361	75,084	679	251,229
5-yr mean (86-90)	653		688		1,341	
20-yr mean (71-90)	668		1,151		1,819	
1991 as:	49		52		51	
% of 5-yr	48		31		37	
% of 20-yr						

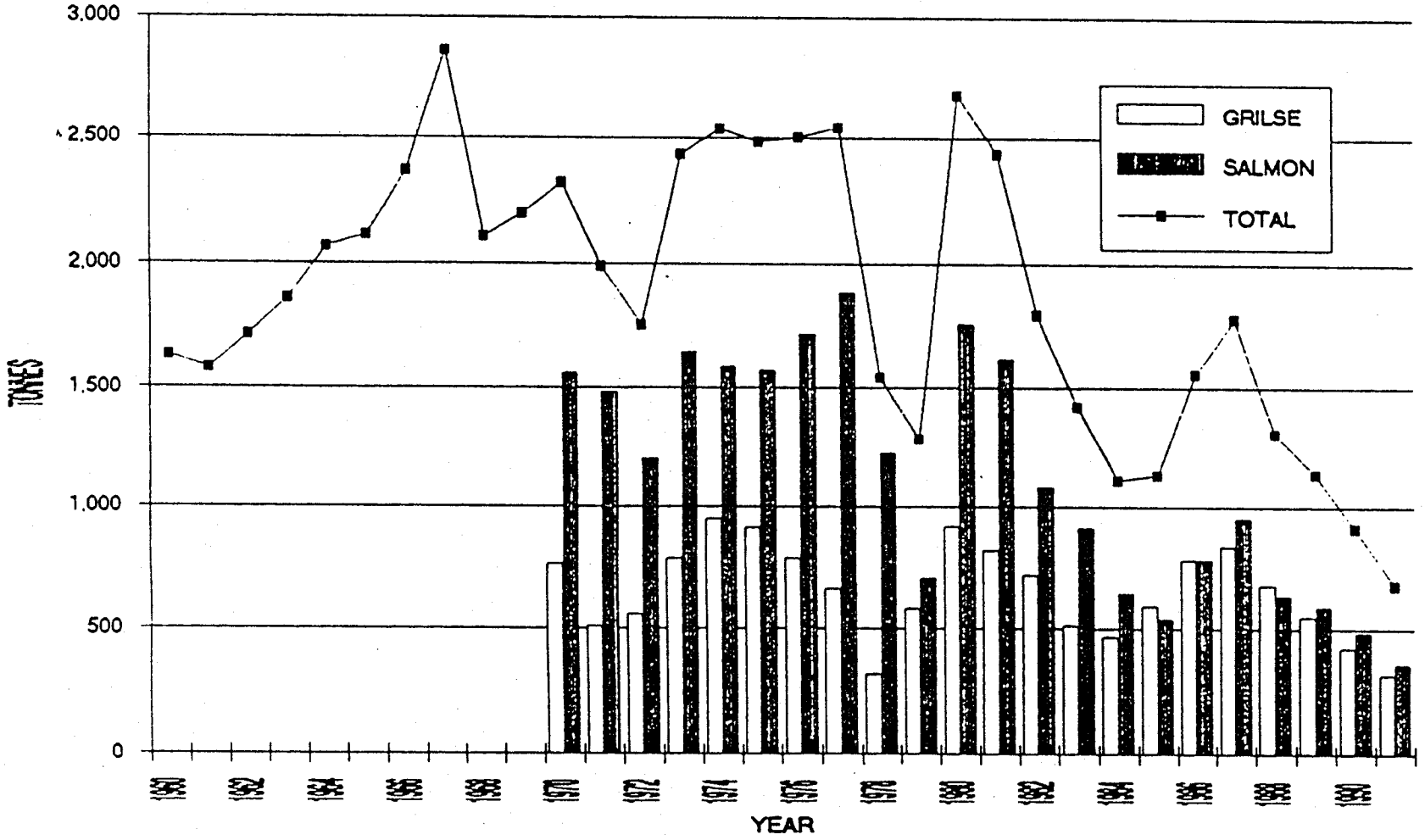
February 14, 1992

HARVEST (TONNES) BY ZONE IN THE NEWFOUNDLAND COMMERCIAL SALMON FISHERIES 1978-82 AVERAGE AND YEARLY SINCE 1983

Zone	1978-82 Average Catch	1983 Catch (tonnes)	1984 Catch (tonnes)	1985 Catch (tonnes)	1986 Catch (tonnes)	1987 Catch (tonnes)	1988 Catch (tonnes)	1989 Catch (tonnes)	1990 Catch (tonnes)	1991 Prelim. (tonnes)	1991 Compared to 1978-82
1	124	81	48	72	89	75	65	76	31	7	-94
2	432	249	169	139	308	407	292	213	150	79	-82
3	254	194	146	123	192	369	192	151	136	108	-57
4	162	130	123	111	200	180	104	133	93	52	-68
5	70	58	58	72	61	60	39	37	24	18	-74
6	57	30	34	65	54	48	25	27	17	19	-67
7	45	23	19	25	19	26	16	14	12	12	-73
8	40	24	31	31	24	23	19	12	9	7	-83
9	16	9	12	11	8	7	8	8	7	5	-69
10	37	22	26	51	49	28	18	40	24	18	-51
11	54	44	33	101	67	53	22	34	30	28	-48
12	79	53	0	0	0	0	0	0	0	0	-100
13	40	33	42	32	79	66	78	46	43	29	-28
14	90	78	56	48	79	146	96	76	44	52	-42
Insular NFLD	894	656	545	644	792	922	577	537	416	313	-65
Labrador	608	371	252	237	438	563	394	330	204	120	-80
TOTAL	1,502	1,027	797	881	1,230	1,485	971	867	620	433	-71

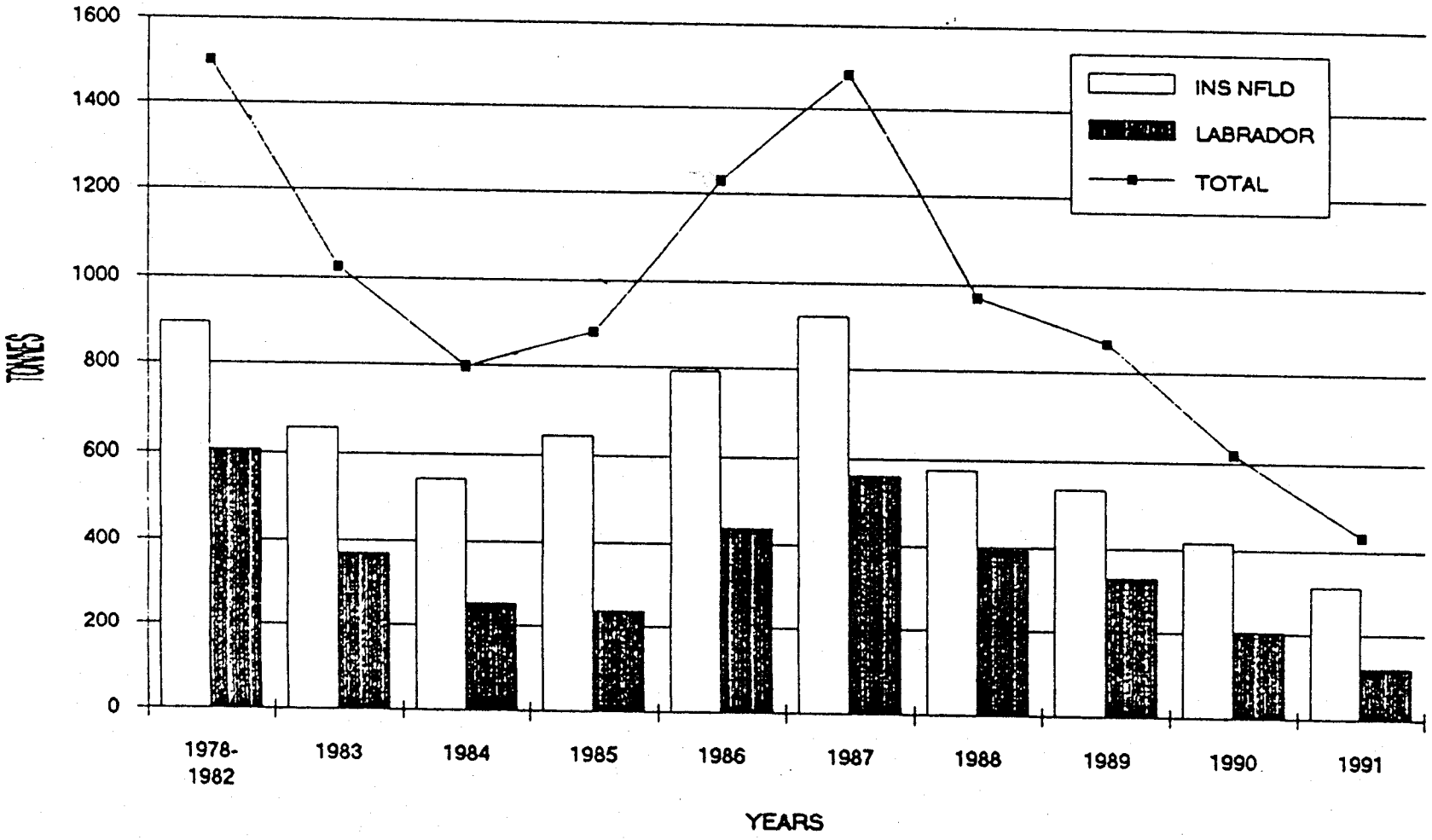
* All figures for 1991 are preliminary

FIG 1:CANADIAN ATLANTIC SALMON CATCHES



FEBRUARY 14,1992

FIG 2: NEWFOUNDLAND-LABRADOR COMMERCIAL SALMON CATCHES



FEBRUARY 11,1992

ANNEX 8

NORTH AMERICAN COMMISSION

NAC(92)7

CAFSAC REPORT
DEFINITION OF CONSERVATION FOR ATLANTIC SALMON

NAC(92)7

CAFSAC REPORT
DEFINITION OF CONSERVATION FOR ATLANTIC SALMON

Canadian Atlantic Fisheries
Scientific Advisory Committee

CAFSAC Advisory Document 91/15

INTRODUCTION

Following court decisions that native food fisheries have first right of access to natural renewable harvestable resources, once conservation is assured, a need exists to define conservation formally on a biological basis. CAFSAC proposes such a definition for Atlantic salmon in this report. A brief description of some of the important biological characteristics of Atlantic salmon is provided first as background information.

BIOLOGICAL OVERVIEW

Atlantic salmon in eastern Canada return to spawn in rivers after at least one winter at sea. Some stocks consist of individuals that always return as mature fish to spawn only after one-sea-winter at sea (1SW also called grilse). Other stocks, as well as having grilse spawners, have spawners which have matured after more than one winter at sea called multi-sea-winter (MSW) salmon. Atlantic salmon can survive spawning and spawn again in a subsequent year for both stock types. When this occurs, the fish are called repeat spawners. Typically, for one-sea-winter stocks the proportion of grilse that are female is greater than 60%. For stocks with both a one-sea-winter and a multi-sea-winter component grilse are predominantly males, whereas MSW salmon are mostly females. The following text table illustrates this for a few rivers:

River	Proportion MSW**	Proportion female		Proportion egg deposition from MSW salmon
		MSW	1SW	
Gulf Region Rivers				
Restigouche	0.61	0.63	0.02	0.99
Nepisiguit	0.38	0.71	0.16	0.89
Miramichi	0.25	0.85	0.24	0.71
Margaree	0.75	0.75	0.12	0.98
Western Arm Brook*	0	-	0.68	0
Scotia Fundy Region Rivers				
Saint John	0.57	0.87	0.06	0.98
St Mary's	0.22	0.63	0.51	0.46
LaHave	0.15	0.73	0.33	0.43
Newfoundland Region Rivers				
Middle*	0	-	0.79	0
Conne*	0	-	0.76	0

* Less than 5% of spawners are previous spawners
** In some Quebec rivers, MSW salmon may comprise a higher proportion of returning salmon

In stocks with both a one-sea-winter and multi-sea-winter component, it is desirable to protect the MSW salmon component because:

- MSW salmon are predominantly female, they are larger than 1SW salmon, they produce more eggs and hence their "reproductive potential" on a per female basis can be two or three times greater than that of one-sea-winter salmon; for rivers where few one-sea-winter salmon are female, the actual contribution of MSW salmon to egg deposition is substantially higher than that of the 1SW grilse as indicated in the table above;

- MSW salmon, unlike those maturing as grilse, range widely and are subjected to interception fisheries distant from their rivers of origin, e.g. Greenland;

- whether Atlantic salmon come back to the rivers as 1SW or MSW is partially determined genetically and therefore egg depositions should be derived from MSW salmon to the extent feasible for these stock complexes with MSW components.

PROPOSED FORMAL DEFINITION OF CONSERVATION

CAFSAC suggests that the following definition, based on the World Conservation Strategy produced in 1980 by the United Nations Environment Program, be adopted by DFO: Conservation is

> "That aspect of renewable resource management which ensures that utilization is sustainable and which safeguards ecological processes and genetic diversity for the maintenance of the resource concerned. Conservation ensures that the fullest sustainable advantage is derived from the resource base and that facilities are so located and conducted that the resource base is maintained."

CAFSAC considered a number of possible operational translations of conservation. All were based on the concept of a "stock". A stock refers to the fish spawning in a particular lake or stream (or portion of it) at a particular season; these fish do not interbreed to any significant degree with any group spawning in a different place, or in the same place at a different season. This concept means that rivers generally have more than one stock, a run in one tributary being considered a stock. The combination of stocks from one river is called a stock complex. It is this highly structured mosaic of distinct genetic types of Atlantic salmon with associated differences in productivity that makes individual stocks particularly susceptible to over exploitation. Salmon stocks are generally adapted to local environmental conditions and the loss of stocks can lead to changes in genetic composition, reduction in genetic diversity and decreased productivity of stock complexes by eliminating elements of the mosaic. The principles of the United Nations Law of the Sea as well as those of the international treaty of the North Atlantic Salmon Conservation Organization, of which Canada is a member, oblige all states of origin to conserve and rationally manage their salmon stocks.

POSSIBLE OPERATIONAL TRANSLATIONS OF CONSERVATION

CAFSAC first considered translations of conservation related to maintaining the current status of stock complexes, but these were deemed inapplicable because the status of Atlantic salmon stock complexes varies from "healthy" to "depleted" to "rebuilding", depending on which river is considered. Such a translation would, therefore, lead to a different "absolute" interpretation

of conservation with respect to each salmon stock complex depending on what its current status was.

CAFSAC then considered translating the definition as the spawning escapement below which CAFSAC would strongly advise that no fishing should occur. However, because this level cannot be defined with absolute precision, allowing the stock complex to fall to such a low abundance was regarded as involving unnecessary risks of causing irreversible damage to a resource's ability to recover in a reasonable period of time. In addition, such a translation would be retrogressive with respect to all recent attempts by national and international organizations at defining conservation which call for ever more stringent interpretations in the context of sustainable development. Individual stocks within the stock complex could be lost under such an exploitation scheme with a potential decrease in productivity. Evidence has shown that full production of salmon from a river system is achieved only when a complex of stocks is present and maintained.

SUGGESTED OPERATIONAL TRANSLATION OF CONSERVATION

CAFSAC proposes that the operational translation be based on the potential productivity of rivers.

Except for skates and sharks, the abundance of recruits for most marine groundfish and pelagic species is believed to be more dependent on the environmental conditions encountered by the larvae and juveniles than by parental abundance, provided the egg production is above some threshold abundance. Although there are indications that the frequency of good recruitment is higher at larger spawning abundance, it is generally accepted that little can be done by fisheries management to improve recruitment. In contrast, relationships between the amount of spawning and subsequent recruits have been identified in some Atlantic salmon populations with recruitment reaching a maximum at an intermediate level of spawning. CAFSAC believes that such relationships do generally exist for Atlantic salmon. For salmon, consequently, fisheries management practices can improve recruitment by ensuring that an optimum number of spawners are allowed to reproduce.

CAFSAC, therefore, suggests as an operational translation of conservation the current target egg deposition rate of 2.4 eggs/m^2 of fluvial rearing habitat, and in addition for insular Newfoundland, 368 eggs/hectare of lacustrine habitat. Because the capacity of fish habitat to produce smolts from a given level of egg deposition is variable and can be influenced by a number of abiotic and biotic factors, there is a need to quantify conservation for each river. CAFSAC proposes to start this process in the autumn of 1991, but until the estimates are refined on a river by river basis, the operational translation given above could be used.

The 2.4 eggs/m^2 reference level is assumed to provide a modest margin of safety for some in-stream adult losses between the time salmon enter into a river and subsequent spawning, as well as for disproportionate adult exploitation and unequal rate of recruitment of the multiple stocks comprising a river stock complex. CAFSAC considers that the further the spawning escapement is below the biological reference level, and the longer this situation occurs even at rates only slightly below that level, the greater the possibility exists of incurring the following risks, some of which may cause irreversible damage to the stock:

- accentuation of annual fluctuations in run size and reduction in the long-term capability of the stock to sustain native food fisheries, recreational fisheries, or commercial fisheries;

- increased susceptibility to extinction from genetic, demographic, or environmental catastrophes and consequent decreases in productivity;

- permanent changes in demographic characteristics of the spawning population;

- replacement in the ecosystem by other competing fish species of potentially less social and economic value.

A recent review of Pacific salmon populations (Nehlsen, et al 1991) that have been identified as being at high risk of extinction, highlight the critical nature of this problem and suggest stock complexes should not be managed only to be sustained at threshold levels of existence. Shaffer (1981) has indicated that a minimum viable population is not one that can be maintained under average conditions, but one that is large enough to endure events of various perturbations and can do so within its particular biogeographic context. Evidence exists to show that salmon populations can and have gone extinct although not necessarily from overfishing alone. Prudent approaches to conservation are required in order to protect stocks and avoid past mistakes.

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ANNEX 9

NORTH AMERICAN COMMISSION

NAC(92)8

CAFSAC REPORT
QUANTIFICATION OF CONSERVATION FOR ATLANTIC SALMON

NAC(92)8

CAFSAC REPORT
QUANTIFICATION OF CONSERVATION FOR ATLANTIC SALMON

Canadian Atlantic Fisheries
Scientific Advisory Committee

CAFSAC Advisory Document 91/16

In Advisory Document 91/15, CAFSAC suggested that the operational translation of conservation for Atlantic salmon be based on the potential productivity of rivers using the target egg deposition rate of 2.4 eggs/m^2 of fluvial rearing habitat and in addition for insular Newfoundland, 368 eggs/hectare of lacustrine habitat. The present document quantifies conservation for 34 rivers in the Gulf, Scotia-Fundy and Newfoundland regions and, where possible, gives first indication of potential surpluses to conservation for 1992 (see Figure 1 for location of rivers). CAFSAC stresses that the actual surpluses that will materialize in 1992 will likely be different from those forecast here. Therefore, CAFSAC suggests that in-season monitoring be implemented in order to ensure that conservation will be met. In addition, CAFSAC emphasizes that surpluses are total for all user groups.

To be able to quantify conservation for each river, it is necessary to have information on the rearing habitat available, on the proportion of males and females in both the one-sea-winter (1SW) and multi-sea-winter (MSW) components and on the number of eggs produced by each of the 1SW and MSW components. This information is generally available for the 10 rivers for which CAFSAC routinely provides advice, but not for the others. It was therefore necessary to make various assumptions with regard to rearing habitat and biological characteristics of the runs for most of the remaining 24 rivers. The rivers can be classified into four categories in decreasing order of the amount of information available on them.

1. Rearing habitat is known and biological characteristics have been measured for the following rivers; Big Salmon, Conne, Grand, North, Margaree, Miramichi, Morell, Musquodoboit, Nepisiguit, Restigouche, Saint John, South and Stewiacke.

2. Rearing habitat was prorated by drainage area but biological characteristics are known for the East River in Pictou County.

3. Rearing habitat is known but biological characteristics were assumed similar to neighbouring rivers for the Baddeck, Buctouche, Middle, Nashwaak, Shubenacadie, and Tabusintac rivers.

4. Neither rearing habitat nor biological characteristics are known and both were assumed similar to neighbouring rivers for the Afton, Eel, Pomquet, Richibucto, and West (Antigonish County) rivers.

The St Mary's, Liscomb, East and West (Sheet Harbour), Gold, LaHave, Medway, Mersey and Tusket rivers are acidic and it is not possible to estimate what egg deposition could ensure conservation for those rivers.

Few forecasts specific to 1992 are available, and CAFSAC provides estimates of average surplus to conservation levels during the previous five years (1986-1990) as an indication of possible 1992 surpluses (Table 1). Here also, the quantity and quality of information available varies from river to river and the following categories can be defined:

1. It is possible to evaluate past returns directly from counting fences, traps or other techniques and therefore spawning escapement for the Conne, Margaree, Miramichi, Nepisiguit, Restigouche, Saint John and South rivers.

2. It is possible to evaluate past returns indirectly by using angling catches divided by an assumed angling exploitation rate from a neighbouring river and obtain indications of whether the egg deposition has been met for the Baddeck, East (Pictou), Grand, Middle, Musquodoboit, North and West (Antigonish) rivers.

3. It is not possible to evaluate past returns but it was assumed that the Afton and Pomquet rivers met the target egg deposition in the same manner as the South and West rivers in Antigonish County that have been monitored.

4. It is not possible to evaluate past returns, but it was assumed that past angling catches are equal to surpluses for the East and West (Sheet Harbour), Gold, LaHave, Liscomb, Medway, Nashwaak, and St Mary's rivers.

5. It is not possible to assess whether the target has been met or to identify possible surpluses for the Buctouche, Eel, Richibucto, Tabusintac, Northwest and Southwest Miramichi Rivers.

Because of the particular concerns with regards to the inner Fundy rivers, CAFSAC suggests that possible surpluses be identified in-season for the Big Salmon, Shubenacadie and Stewiacke rivers.

Although CAFSAC does provide estimates of possible surpluses in 1992, there are a number of caveats that should be taken into account. For instance, the use of past recreational harvest as an indication of future surpluses has numerous drawbacks. The problem is particularly acute on small streams with little or no harvest, or not reporting. Lack of harvest can indicate that surpluses are small or non-existent and that run-size is insufficient to meet conservation requirements; in addition, during low and/or warm water conditions, fish may have been unable to access the river. Conversely, high angling harvests may be mistakenly interpreted in stocks that are highly catchable under ideal angling conditions.

CAFSAC notes that preliminary information suggests that 1SW returns in 1991 may have been low in some rivers throughout the Atlantic regions. This could be expected to be reflected in low MSW returns in 1992.

Hatchery broodstock is included in most spawning requirements because continued hatchery releases are essential to sustain the identified harvests. Considering the heavy dependence of many rivers on hatchery stocking, variable release numbers and quality of the hatchery product can affect hatchery returns and thereby surpluses. Variable marine survival can be expected to affect return rates for hatchery and wild smolts equally. There are no broodstock requirements for rivers which do not have some natural recruitment capacity, for example, the Mersey River which is acidified and dammed. Hatchery stocking is used to mitigate for the

loss of the salmon's habitat and rebuild (enhance) stocks which for many reasons, including past over-exploitation, have been depressed. Unfortunately, stocks which are currently being enhanced are included in many of the rivers for which surpluses are declared. For these enhancement efforts to bring their fullest benefits, more specific information will be required on season and fishing locations where efficient harvesting techniques should not be allowed.

Surpluses and hatchery stocking can also be used to develop salmon runs in new habitat (for example in the Saint John River). It may therefore be prudent not to allocate all surpluses to fisheries.

NEWFOUNDLAND REGION

Within insular Newfoundland, the Conne River is the only river on which there currently exists a native food fishery.

To meet conservation, egg deposition on the Conne River should be 7.8 million eggs to be deposited by about 4,000 grilse. The angling harvest for 1986 to 1990 of 1SW has averaged about 1,400 grilse per year and the native harvest has averaged about 460 grilse and 3 MSW salmon. Complete counts of returns to the river are obtained from a counting fence. Average surplus to conservation for 1986-90 has been estimated at 1,238 grilse available for all users. Pre-season forecast indicates that the surplus could be as high as 1,529 grilse for 1992. In 1986, an estuarial native food fishery was initiated by the Conne River Native Band with a quota of 1200 grilse.

GULF REGION

Several river systems within the Gulf Region are currently targeted by native food fisheries, all of them within New Brunswick. The following rivers in the Region were examined:

Miramichi River	(NB)
Restigouche River	(NB)
Tabusintac River	(NB)
Eel River	(NB)
Richibucto River	(NB)
Buctouche River	(NB)
Nepisiguit River	(NB)
Morell River	(PEI)
East River	(NS)
Afton River	(NS)
Pomquet River	(NS)
Margaree River	(NS)

GULF NEW BRUNSWICK

The rivers of Gulf New Brunswick (Salmon Fishing Areas (SFA) 15 and 16) currently or potentially exploited by native food fisheries are a mixture of small and large rivers. In addition, native food fisheries on the Restigouche River are exploited by one band situated in New Brunswick and another in Quebec. The smaller rivers in Gulf New Brunswick are late run rivers, with fish generally entering after August. The Restigouche River is almost exclusively early run whereas the Miramichi has both run components although the proportion

of each component in any given year has been extremely variable. All rivers have a significant MSW salmon component.

To meet conservation on the Restigouche River, the 71.4 million eggs should be deposited by 12,200 MSW salmon combined with 2,600 grilse. The Restigouche supports an early run of salmon. Rearing area has been estimated and biological characteristics are available. Approximately 8,400 MSW and 4,900 grilse have escaped to spawn on average for 1986 to 1990 as estimated by dividing catches by an assumed exploitation rate of 0.5. The MSW target egg deposition has not been met in the last five years, but the number of grilse spawners has exceeded those required. There are no surplus MSW salmon but the surplus to conservation for all users of 1SW could be about 7,300 in 1992. The angling harvest (including Quebec) for 1986 to 1990 has averaged 1,314 MSW and 4,921 grilse, while the native harvest is estimated at 1,633 MSW and 100 grilse.

To meet conservation on the Eel River, the 1.013 million eggs should be deposited by 173 MSW and 37 grilse. Rearing area was estimated from the proportion of rearing area to drainage area for Nepisiguit River, NB. The biological characteristics were assumed similar to those of the Restigouche stocks. The Eel River is a late run river. There has not been any reported angling in recent years and no surplus can be identified. The Eel River Native Band fishes 2 trap nets and a number of gillnets in the mouth of Eel River, 5km south of Dalhousie - the mouth of the Restigouche River - during May, June and July. Salmon caught are assumed to be from the Restigouche stocks because of the early run timing of salmon in the Restigouche River. These harvests are included in the Restigouche assessments.

To meet conservation on the Nepisiguit River, the 9.535 million eggs should be deposited by 1,363 MSW and 654 grilse. Rearing area has been calculated and biological characteristics are available. The early salmon run on the Nepisiguit River has been developed through the enhancement process originally from broodstock of the Miramichi and Restigouche rivers but in recent years broodstock collection of 133 MSW salmon on average has come from the Nepisiguit River. Total returns were calculated from information collected at a counting fence as well as redd counts. Surpluses of MSW salmon and 1SW salmon have been identified in four of the five years in the 1986-90 interval. The surplus to conservation for all users (after average broodstock collections are subtracted) would be 360 MSW and 1,860 grilse. The angling harvest for 1986-90 has averaged 14 MSW (as a result 3% hook and release mortality) and 740 grilse. Any harvesting of Nepisiguit stocks should be limited primarily to early and late run grilse and late run salmon.

To meet conservation on the Tabusintac River, the 1.867 million eggs should be deposited by 334 MSW combined with 320 grilse. Rearing area was estimated from the proportion of rearing area to drainage area for the Buctouche River, NB. Biologically they are assumed to be similar to stocks of the Miramichi River. Run timing is late August through October. It was not possible to forecast either returns or surpluses. Angling harvest of 1SW salmon has averaged 349 fish for 1986-90.

To meet conservation on the Miramichi River, the 132 million eggs should be deposited by 23,600 MSW salmon and 22,600 grilse. Rearing area has been calculated and biological characteristics are available. Returns to the Miramichi are estimated from catches in an estuarial salmon trap operated by the Department of Fisheries and Oceans. Tag-recapture estimates of returns are made annually to verify that the trap efficiency has not changed since calibration. Spawning requirements for conservation by MSW salmon have been met in only

2 of the last 5 years. Spawning requirements for conservation by 1SW salmon have been exceeded in each of the last five years. Conservation has been met in each of the past five years if eggs from both 1SW and MSW salmon are considered, but not based on eggs from MSW salmon alone. CAFSAC considers that there are no MSW surpluses. The surplus to conservation to all users, based on the average for 1986-90, is about 75,400 grilse for 1992. The angling harvest for 1986-90 has averaged 24,669 1SW and 345 MSW (as a result of 3% hook and release mortality), while the native harvest has averaged 607 MSW salmon and 1,480 grilse. Salmon return to the Miramichi between May and November with peaks in May-August and September-November. Both the native and the angling fisheries target the early run. The early run alone has not met the conservation requirements for MSW salmon in any of the last five years. However, the early runs have met the conservation requirement for 1SW salmon in each of the last five years.

To meet conservation on the Northwest Miramichi, the 40 million eggs should be deposited by 7,300 MSW and 6,900 grilse. It is not presently possible to identify possible surpluses for 1992.

To meet conservation on the Southwest Miramichi, the 88 million eggs should be deposited by 15,800 MSW salmon and 15,200 grilse. It is not presently possible to identify possible surpluses for 1992.

To meet conservation on the Richibucto River, the 2.942 million eggs should be deposited by 526 MSW salmon and 504 grilse. Rearing area was estimated from the proportion of rearing area to drainage area for surveyed rivers in the same geographic area. Biological characteristics were assumed similar to Miramichi stocks. There have been both angling catches and native harvests during the 1980-90 period, but the amount caught is not known. The Richibucto is a late run river. It is not possible to identify whether surpluses will exist in 1992.

To meet conservation on the Buctouche River, the 1.07 million eggs should be deposited by 191 MSW salmon and 183 grilse. Rearing area was measured but biological characteristics were assumed similar to Miramichi stocks. There has not been a native harvest from the Buctouche River during the period 1986 to 1990. The Buctouche is a late run river. It is not possible to identify whether surpluses will exist in 1992. The angling harvest for 1986 to 1990 has averaged 15 grilse.

GULF PEI

To meet conservation on the Morell River, the 0.482 million eggs should be deposited by 156 MSW salmon and 47 grilse. Rearing area and biological characteristics are available. The salmon run on the Morell River is the result of extensive habitat restoration and salmon enhancement activities. The majority of the salmon returning (an average of 97% since 1986) are of hatchery origin. In 1991, 37,796 smolts were stocked into the Morell. Given a 3.5% return rate, approximately 1,300 adipose clipped grilse should return to the Morell in 1992. The proposed minimum stocking rate of 55,000 smolts annually beginning in 1992 should result in a return of at least 1,900 adipose clipped grilse annually from 1993 onward. Given that 42% of the available habitat lies above Leard's Pond where the counting fence is located, at least that proportion of total spawning requirements for the whole river should be met by MSW salmon passing through the Leard's Pond fishway. Although this target has been met since 1987, only a small proportion of the MSW and 1SW returns (0-6.3%) have been wild

fish. The grilse conservation requirement has been greatly exceeded each year since 1986 and this trend promises to continue. CAFSAC therefore suggests that to facilitate the re-establishment of a wild spawning population containing a larger proportion of large salmon, that harvesting be restricted to adipose clipped (hatchery) grilse. Angling harvest has averaged 458 grilse for 1986-90.

GULF NOVA SCOTIA

The rivers in Gulf Nova Scotia (SFA 18) within the boundaries of reserve land include East River (Pictou Co.), Pomquet and Afton rivers and the Margaree River. These rivers share several characteristics: 1) they are fall run rivers with the majority of salmon entering in late September and throughout October, with exception of Margaree which has a summer component that has represented on average 20% of total MSW salmon returns and 55% of 1SW returns to this river; 2) the run components are predominantly MSW salmon (Margaree proportion for the fall component has averaged over 75% in recent years); and 3) no recent historical native food fisheries for salmon have been documented.

The Margaree River has been assessed on an annual basis since 1985. Current assessment of returns is based on angling catches from each river and on exploitation rates derived from the Margaree River for the fall component. Since 1984, MSW salmon angling data are hook and release estimates which have associated biases:

1) fish not landed and handled to remove hook do not necessarily correspond to fish which would have been landed and killed historically; and

2) the possibility exists of multiple captures of fish as a result of hook and release, thus biasing the estimation of exploitation rates based on mark/recapture population estimates.

On the basis of the data available, all the Gulf Nova Scotia rivers examined have had, on average, a surplus to conservation requirements between 1984 and 1990. Smaller rivers such as the Pomquet and Afton are believed to have received similarly high returns in recent years but the stock size is relatively small (probably less than 200 fish) and caution is advised in the allocation of fish from these stocks.

To meet conservation on the East River (Pictou Co.) the 1.812 million eggs should be deposited by the 281 MSW and 59 grilse. Rearing area was estimated from the proportion of rearing area to drainage area for River Philip, NS. The East River is a late run river with peak angling catches occurring in the latter part of October. Biological characteristics were available. Current assessment of the state of the stock is based on angling catches including kept and released 1SW salmon and hook and release MSW salmon. Angling exploitation rates were assumed equal to those for the fall angled salmon from the Margaree River. It is not possible to forecast returns but based on recent estimates of escapement since 1986, returns in the next five years should remain well above spawning requirements. The average surplus requirements between 1986 and 1990 has been estimated at 159 grilse and 392 MSW salmon. Angling harvest has averaged 6 MSW (as a result of 5% hook and release mortality) and 57 grilse during 1986-90.

To meet conservation on the Pomquet and Afton rivers, the egg deposition of 0.288 million eggs should be deposited by 70 MSW salmon. Because of their small size and proximity, the

Pomquet and Afton rivers are combined for analysis. The rivers are assumed to be late run rivers similar to nearby South and West rivers (Antigonish Co.) where returns and angling catches peaked in the latter part of October. Qualitative estimates of escapement in recent years are based on returns to West River and South River and the production rate from these rivers was assumed to be similar to the Pomquet and Afton rivers. The biological characteristics used in calculating conservation requirement are based on the South River stock. The rearing area was estimated from the proportion of rearing area to drainage area for the South River. Assuming similar escapements as those noted in the previous five years from the West River (based on angling catches) and at South River (counting fence from 1984 to 1987) which were between two to three times the requirements, returns to the Pomquet and Afton rivers in coming years should be above conservation requirements. The surplus is probably less than 70 MSW salmon. All grilse are considered surplus (approx. 200 on average), assuming that surpluses will be in proportion to those observed on the West River in the recent past.

To meet conservation on the South River (Antigonish Co.), the 0.228 million eggs should be provided by 70 MSW salmon. The rearing area was surveyed. The South River is a late run river, with returns at the counting fence peaking in the latter part of October, and the first fish appearing in early September. The biological characteristics were obtained from samples at a counting fence operated between 1981 and 1987 although data prior to 1984 are not considered reliable for Atlantic salmon. Angling catches in recent years are negligible (less than 4 fish of either size) or not reported. The surplus to conservation for all users, based on the average surpluses between 1984 and 1986, is estimated at 64 MSW and 21 grilse for 1992.

To meet conservation on the West River (Antigonish Co.) the 0.371 million eggs should be deposited by 114 MSW salmon. The rearing area was estimated from the drainage area and the proportion of rearing area to drainage area for the South River, NS. This is a late run river with peak angling catches in the latter part of October. Biological characteristics are based on those of the South River stock. Current assessment of the state of the stock is based on angling catches including kept and released 1SW salmon and hook and release MSW salmon. Angling exploitation rates are assumed to equal those for the fall angled salmon from the Margaree River. Based on recent estimates of escapement since 1986, returns in the next five years should remain well above conservation requirements. The surplus to conservation for all users, based on the average between 1986 and 1990 is estimated at 227 MSW and 228 grilse for 1992. Angling harvest has averaged 59 grilse for 1986-90.

To meet conservation on the Margaree River, the 6.714 million eggs should be deposited by 1,036 MSW and 582 grilse. The rearing area was surveyed during the 1950s through the 1970s. They are summer and fall (after Aug 31) run components in the river with the fall run comprising over 80% of MSW and 45% of 1SW returns in recent years. Biological characteristics are available. Current assessment of the state of the stock is based on angling catches including kept and released 1SW salmon and hook and release MSW salmon. Angling exploitation rates are assumed equal to those for the fall angled 1SW and MSW salmon from the Margaree River for the years 1988 to 1990. Based on recent estimates of escapement since 1986, returns in the next five years should remain well above conservation requirements. The surplus to conservation for all users, based on the average between 1986 and 1990 is estimated at 2,939 MSW and 658 grilse for 1992. Angling harvest has averaged 41 MSW (as a result of 5% hook and release mortality) and 349 grilse for 1986-90. Surplus fish should be allocated so that, at a maximum, the proportion of summer run fish does not

exceed that noted in the total returns since 1984, that is 55% for 1SW salmon and 20% for MSW salmon. Broodstock requirements for enhancement purposes in recent years have averaged 50 MSW from the summer run. Enhancement efforts have concentrated on development of the summer run component.

SCOTIA-FUNDY REGION

Stocks of nineteen rivers in the Scotia-Fundy Region were examined of which review of all except the Big Salmon River had been requested by fisheries managers because of their current or potential native food fisheries. Separate approaches were used to identify potential surpluses of acid impacted and non-acid impacted rivers.

For acid impacted rivers, that is for most rivers of the eastern and south shores of Nova Scotia (SFAs 20,21) for which total substrate areas had been estimated by remote surveys, it was not possible to use the 2.4 eggs/m^2 conservation requirement. Egg requirements for those rivers are unknown because egg and juvenile survival is limited by highly variable pH conditions (both temporal and spatial) within each drainage area. Thus, without appropriate estimates of the egg deposition required, CAFSAC was unable to identify the spawners needed for conservation. Surpluses for these rivers were, by default, generally identified as the recreational fishery harvest for the period 1986-1990. However, where pH precluded any natural recruitment, surpluses were identified as the product of stocked hatchery smolts times the adult return rates. All acid impacted rivers considered herein are stocked and in most, the escapement of hatchery fish contributes to either the preservation of depleted stock components or the maintenance of harvests. Thus future surpluses in these rivers are dependent on future levels of stocking.

The nine acid impacted rivers considered were: East River Sheet Harbour, West River Sheet Harbour, Liscomb, Saint Mary's, Gold, LaHave, Medway, Mersey and Tusket.

The non-acid impacted rivers include the remaining rivers for which substrate area has been quantified and target eggs and spawners have been estimated. Substrate was quantified in Nova Scotia on the basis of remote surveys and, in New Brunswick, by field surveys without gradient qualification. With the exception of the Nashwaak, surpluses were identified as the difference between estimates of the past average total river returns and spawner requirements.

Total returns were estimated on 7 rivers of Nova Scotia from recreational catches (1SW retained and MSW released). These rivers were the Grand, Middle, Baddeck, North, Musquodoboit, Shubenacadie and Stewiacke.

Total returns for the Saint John at/above Mactaquac and Big Salmon rivers of New Brunswick were derived from data from a fishway or in-river (salmon pools) counts. No returns were estimated for the Nashwaak River, NB because of the absence of counts, the uncertainty in choosing between two quite different estimates of recreational harvest and the difficulty in selecting an appropriate exploitation rate.

To meet conservation on the Grand River, the 1.1 million eggs should be deposited by 100 MSW and 440 grilse. Information on rearing area and biological characteristics is available. Counts were conducted at a fishway during 1988-1990. Fifty percent of the 1990 and 40% of the 1991 returns were of hatchery origin. MSW fish are repeat spawning grilse with only a small portion of 2SW salmon. Because of unknown removals above the fishway as well

as an unknown by-pass rate of the fishway, total river escapements could not be calculated in all years. Using the average number of fish reported in the angling fishery for 1986-90, assuming that releases have been overestimated by a factor of two, and an assumed exploitation rate of 0.33, an average of 74 MSW and 487 grilse could be considered surplus to conservation for all users. However, grilse have been less than required in 1990 and 1991. Native food fisheries occurred in 1990 and 1991 but the catch is unknown. Angling harvest has averaged 6 MSW (as a result of 5% hook and release mortality) and 306 1SW salmon for 1986-90.

To meet conservation on the Baddeck River, the 2 million eggs required should be deposited by 450 MSW and 80 grilse. The rearing area has been measured, but the biological characteristics have been assumed to be the same as the North River. A native food fishery at a headland between Middle and Baddeck rivers likely intercepts Baddeck River stock. The surplus to conservation for all users may be 35 grilse based on the angling catches divided by an exploitation rate of 0.20. Angling harvest has averaged 9 MSW (as a result of 5% hook and release mortality) and 23 grilse for 1986-90.

To meet conservation on the Middle River, the 2.07 million eggs required should be deposited by 470 MSW and 80 grilse. The rearing area has been measured but biological characteristics have been assumed similar to the North River. The information on spawning escapement available from diver counts in 1989 and 1990 suggests that between 7 and 14% of the escapement is from hatchery origin fish. A negotiated native food fishery was for 130 salmon, without distinction into MSW or 1SW, to be taken with approximately 10 nets at a headland between Middle and Baddeck rivers. Using angling catches, assuming that releases have been overestimated by a factor of 2, and an assumed exploitation rate of 0.20, no surplus of MSW is expected but there could be a surplus of 165 grilse for all users. The angling harvest has averaged 8 MSW (as a result of 5% hook and release mortality) and 49 grilse for 1986-90.

To meet conservation on the North River (Victoria Co.), the 0.85 million eggs required should be deposited by 200 MSW and 30 grilse. The rearing area was measured and the biological characteristics are known. Assuming that releases have been over estimated by a factor of two and an angling exploitation rate of 0.40, based on average angling catches for 1986 to 1990 there could be surpluses to conservation for all users of 574 MSW and 370 grilse. The angling harvest has averaged 31 MSW (as a result of 5% hook and release mortality) and 160 grilse for 1986-90.

The egg deposition required to meet conservation on the St Mary's River is unknown because the river is acid impacted. The population appears stable under current exploitation by the angling fishery. The surplus to conservation for all users is assumed to be equal to the mean angling harvest of 1,007 grilse and the 27 MSW salmon believed to die as a result of the hook and release program.

The egg deposition required to meet conservation on the Liscomb River is unknown because the river is acid impacted. Future returns are dependent upon the level of hatchery stocking which has accounted for 25 to 50% of the 1986 to 1990 returns. Returns also depend on the severity of the acid impact. The reduced returns of 1SW observed in 1991 suggest reduced returns of MSW in 1992. The surplus to conservation for all users is assumed to be equal to the mean angling harvest of 157 grilse. No surplus of MSW salmon is expected.

The egg deposition required to meet conservation of the East River Sheet Harbour is unknown because the river is acid impacted and almost entirely obstructed to upstream migration. The 17,000 smolts released in 1991 are expected to yield returns of 100 grilse in 1992, with about 50 of them considered surplus to conservation for all users. The angling harvest has averaged 62 1SW salmon for 1986-90.

The egg deposition required to meet conservation on the West River Sheet Harbour is unknown because the river is acid impacted. The population appears stable under current exploitation by the angling fishery but considering the severity of the acid impact, higher exploitation rates are unlikely to be sustainable. Hatchery releases are used to partly mitigate the acid impact. The surplus to conservation for all users is assumed to equal the mean angling harvest of 161 grilse.

To meet conservation on the Musquodoboit River, the 1.9 million eggs required should be deposited by 400 MSW and 400 grilse. The rearing habitat has been measured and biological characteristics are available. Assuming that releases have been over estimated by a factor of two, an angling exploitation rate of 33% was used to estimate total returns and surpluses of 1SW and MSW salmon. Because the run is 40% hatchery origin, surpluses are dependent upon the continuation of the current level of hatchery support. No surplus MSW salmon are expected but based on the average for 1986 to 1990, the surplus to conservation of 1SW salmon for all users is estimated to be 385 fish. The angling harvest has averaged 11 MSW (as a result of 5% hook and release mortality) and 259 grilse for 1986-90.

The egg deposition required to meet conservation on the Gold River, is unknown because the river is acid impacted. In addition, the river suffers from chronic low summer discharges. The river has received enhancement with some native stock to assist rebuilding and mitigate the acid impact. The population seems stable under current angling exploitation rates. The surplus to conservation for all users is assumed equal to the average angling harvest of 313 grilse.

The egg deposition required to meet conservation on the LaHave River is unknown because the river is acid impacted. The MSW salmon returns are insufficient to fully seed the drainage at 2.4 eggs/m^2. The 1SW and MSW salmon escaping the fisheries are probably adequate to meet conservation requirements at 2.4 eggs per sq m but the distribution of spawners and higher seeding rates required in acid impacted areas may hamper attainment of conservation requirements throughout the drainage. Spawning requirements must include 110 MSW salmon and 25 grilse for hatchery broodstock needed to sustain native food and recreational fisheries in rivers in Queens, Shelburne and Lunenburg counties. Spawning escapements are known for the 40% of the drainage above Morgan Falls. The population appears stable under current exploitation by the angling fishery. The surplus to conservation for all users is assumed to equal the mean angling harvest of 2,069 grilse and the mean estimated mortality of 28 MSW from hook and release.

The egg deposition required to meet conservation on the Medway River is unknown because the river is acid impacted. The acid impact is partly mitigated by hatchery stocking which contributes to a significant part of the returns and annual harvest. The surplus to conservation for all users is assumed to equal the mean angling harvest of 631 grilse and the mean estimated mortality of 10 MSW salmon from hook and release.

There is virtually no requirement for egg deposition on the Mersey River because the river is acid impacted and obstructed by hydro-electric development. Natural production in the lower unobstructed portion of the drainage appears to be negligible. Returns are largely the result of annual hatchery smolt releases of LaHave stock and forecast of returns assumes a mean smolt to adult return rate. Annual releases are expected to range from 15-20,000 smolts and a mean return rate of 4% is reasonable based on past performance. Annual returns should be about 700 fish (600 grilse and 100 MSW salmon). In 1992, adult returns are expected to be 600 grilse and 50 MSW salmon, consistent with the lower return of 1SW salmon in 1991. Surplus to conservation for all users is equal to all returns in 1992, that is 50 MSW and 600 grilse. The angling harvest has averaged 95 grilse for 1986-90.

The egg deposition required to meet conservation on the Tusket River is unknown because the river is acid impacted. Wild production is limited to a part of a tributary, the Carleton River. Production area includes areas which are acid impacted. Partial counts of 496 grilse and 64 MSW salmon were recorded after the angling fishery in 1990 and more than 60% of the returns are of hatchery origin. Annual wild production appears limited to about 200 fish annually. Annual stocking of 30,000 smolts will be continued. A mean smolt-adult return rate of 1.5% is consistent with past performance and implies returns of 90 MSW and 360 grilse while 40 MSW and 160 grilse are expected from wild production. Surplus to conservation for all users can be identified as 500 grilse, mostly of hatchery origin. The angling harvest has averaged 176 grilse for 1986-90.

To meet conservation on the Shubenacadie River, the 1.39 million eggs required should be deposited by 130 MSW and 350 grilse. Angling harvests and therefore returns to all rivers of the Inner Bay of Fundy have been extremely low in four of the past five years and resulted in a management closure of all fisheries pending an in-season count of 700 salmon in the Big Salmon River. Therefore, no surplus to conservation can be identified at this time for the Shubenacadie River. The angling harvest has averaged 51 grilse for 1986-90.

To meet conservation on the Stewiacke River, the 3.1 million eggs required should be deposited by 310 MSW and 800 grilse. Angling harvests and therefore returns to all rivers of the Inner Bay of Fundy have been extremely low in four of the past five years and resulted in a management closure of all fisheries pending an in-season count of 700 salmon in the Big Salmon River. Therefore, no surplus to conservation can be identified at this time for the Stewiacke River. The angling harvest has averaged 11 MSW (as a result of 5% hook and release mortality) and 394 grilse for 1986-90.

To meet conservation on the Big Salmon River, the 2.2 million eggs required should be deposited by 420 MSW and 280 grilse. Estimates of escapements are conducted by divers in late autumn. Similarity in recruitment pattern has been demonstrated for all stocks of the Inner Bay of Fundy and Big Salmon River, like all rivers of the Inner Bay of Fundy, have been extremely low in four of the past five years and has resulted in a management closure of all fisheries pending an in-season count of 700 salmon in the Big Salmon River. Therefore, no surplus to conservation can be identified at this time for the Big Salmon River. The angling harvest has averaged 76 grilse for 1986-90.

To meet conservation on the Saint John River at and above Mactaquac, the 29.43 million eggs required should be deposited by 4,400 MSW and 3,200 grilse. Annual total returns are based on complete counts at Mactaquac raised by estimated removals down river. Over the period 1986 to 1990, hatchery fish have averaged 18% of 1SW returns and 15% of MSW returns.

Returns in 1991 are expected to number about 5,000 MSW fish and 8,000 grilse, i.e. about 105% of MSW and 84% of 1SW 1986-90 mean returns. Surpluses in 1991 may be 125 MSW and 4,800 1SW fish. It is expected that 1SW and MSW returns in 1992 will be lower than the 1986 to 1990 averages. It is expected that MSW returns will not be sufficient to meet conservation in 1992. Based on average surpluses, 1986-1990, there could be a surplus to conservation for all users of 6,370 grilse. For the period 1986-90, the angling harvest has averaged 1,802 grilse and an unknown mortality of MSW salmon, while the native harvest has averaged 953 MSW and 381 grilse. CAFSAC notes that the early-run Serpentine component should be protected.

To meet conservation on the Nashwaak River (a tributary of the Saint John River below Mactaquac), the 11.85 million eggs required should be deposited by 1,800 MSW and 1,700 grilse. The rearing area has been measured but biological characteristics are assumed similar to those stocks monitored at Mactaquac. The only information on stock status is derived from angling statistics. Based on two independent sets of angling statistics there may be 23 MSW salmon and 674 grilse surplus for all users in 1992. The angling harvest used previously in assessments below Mactaquac has averaged 469 grilse and 9 MSW salmon (as a result of 5% hook and release mortality).

Table 1. Atlantic salmon spawning requirements and average surplus to requirements (see attached map for location of rivers).

River Tributary	Spawning Requirements		Average Surplus to Requirements for all Users		Recent Harvests			Comments
	MSW	1SW	MSW	1SW		MSW	1SW	
NEWFOUNDLAND								
Conne		4000		1238	Angling Food fishery	 3	1400 460	Surplus for 1986-1990 based on direct evaluation of returns. Forecast for 1992 of 1529 fish. Adjustments to be based on in-season evaluations.
GULF								
Restigouche	12200	2600	0	7300	Angling Food fishery	1314 1633	4921 100	Based on angling catches. Early run river.
Eel	173	37	unknown	unknown	(included in Restigouche)			Late run river.
Nepisiguit	1363	654	360	1860	Angling	14	740	Surplus for 1986-1990 based on direct evaluation of returns. Harvesting should be limited primarily to early- and late-run grilse and late-run salmon.
Tabusintac	334	320	unknown	unknown	Angling		349	Late run river.
Miramichi								
- Northwest	7256	6949	0	see comment				Makes up ~1/3 of the total stock.
- Southwest	15843	15172	0	see comment				Makes up ~2/3 of the total stock.
- Tributaries to the main stem	501	479	0	see comment				Small portion of the total stock.
Total	23600	22600	0	75400	Angling Food fishery	345 607	24,669 1480	Surplus for 1986-1990 based on direct evaluation of returns. This is an early and late run river.
Richibucto	526	504	unknown	unknown	unknown		unknown	Late run river.
Buctouche	191	183	unknown	unknown	Angling		15	Late run river

Table 1. Atlantic salmon spawning requirements and average surplus to requirements (see attached map for location of rivers).

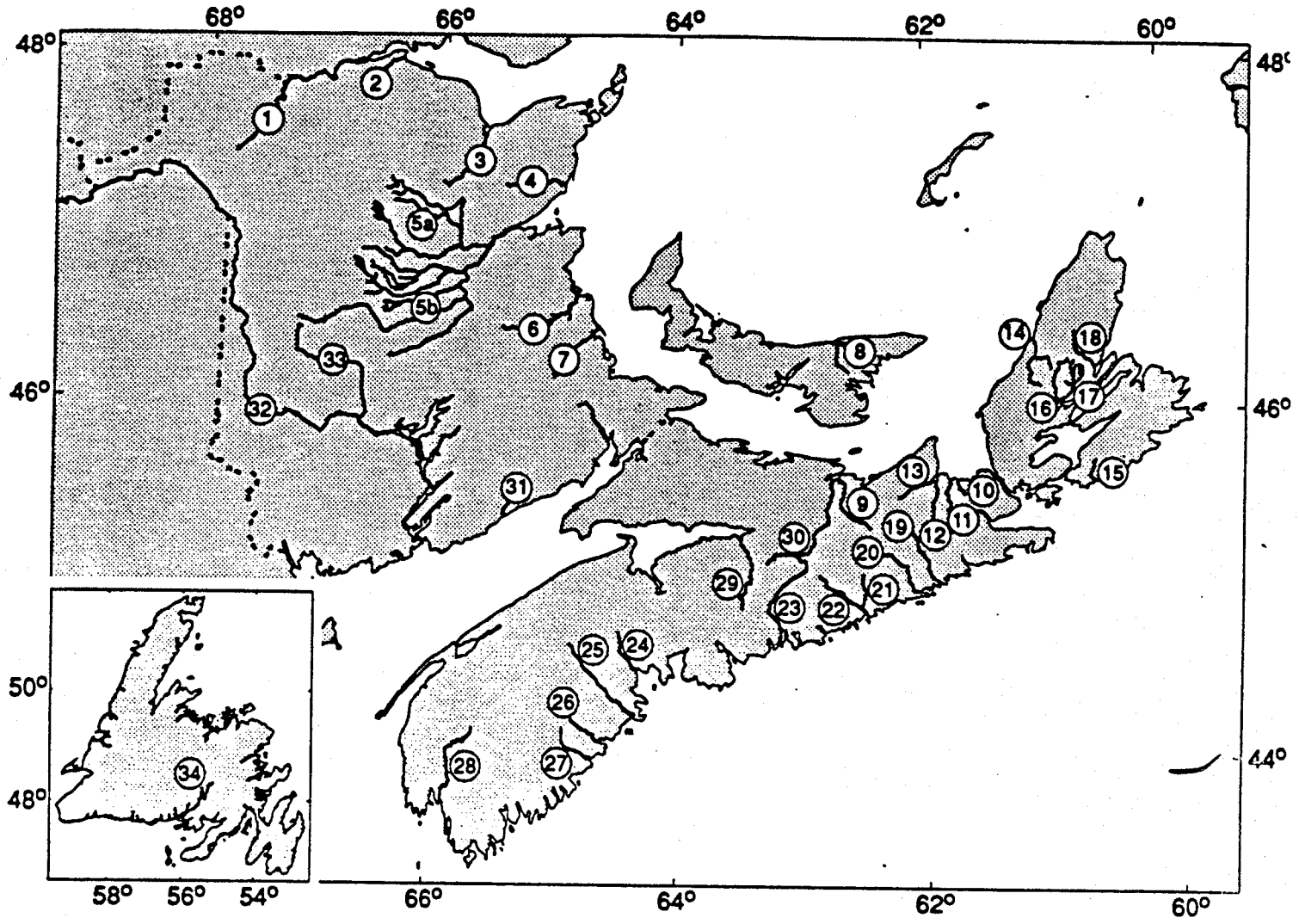
River Tributary	Spawning Requirements		Average Surplus to Requirements for all Users		Recent Harvests			Comments
	MSW	1SW	MSW	1SW		MSW	1SW	
Morell	156	47	0	760	Angling		458	Surplus for 1992 of all hatchery origin grilse will be 1300 based on smolts stocked and a projected return rate. Surplus for 1993 onward would be approximately 1900 adipose-clipped grilse. In order to establish a MSW component of wild spawners harvesting should be limited to hatchery return (adipose fin-clipped) grilse.
East (Pictou Co.)	281	59	392	159	Angling	6	57	Surpluses for 1986-1990 based on sport catch, assumed exploitation rates and spawning requirements. Late run river.
Pomquet/Afton	70	0	>70	200				Surpluses based on angling catches in the West River and counts in the South River. Late run river.
West (Antigonish Co.)	114	0	227	228	Angling		59	Surpluses for 1986-1990 based on sport catch, assumed exploitation rates and spawning requirements. Late run river.
South	70	0	64	21	Angling	<4	<4	Surpluses based on direct evaluation of returns (1984-1986). Late run river.
Margaree	1036	582	2939	658	Angling	41	349	Surpluses for 1986-1990 based on direct evaluation of returns. Surplus fish should be allocated so that no more removals than 55% of 1SW and 20% of MSW occur in the summer. Early and late run river.
SCOTIA-FUNDY								
Grand	100	440	74	487	Angling	6	306	Surpluses for 1986-1990 based on sport catch, assumed exploitation rates and spawning requirements. Unknown removals may exceed the 20% poaching and disease factor included in the 2.4 eggs/m^2 target.

Table 1. Atlantic salmon spawning requirements and average surplus to requirements (see attached map for location of rivers).

River Tributary	Spawning Requirements		Average Surplus to Requirements for all Users		Recent Harvests			Comments
	MSW	1SW	MSW	1SW		MSW	1SW	
Middle	470	80	0	165	Angling	8	49	Surplus for 1986-1990 based on sport catch, assumed exploitation rates and spawning requirements. Native food fishery quota of 130 salmon exploits fish returning to the Middle and Baddeck rivers.
Baddeck	450	80	0	35	Angling	9	23	Surplus for 1986-1990 based on sport catch, assumed exploitation rates and spawning requirements.
North	200	30	574	370	Angling	31	160	Surpluses for 1986-1990 based on sport catch, assumed exploitation rates and spawning requirements. Apparent high returns of salmon requires count verification by divers before surpluses are allocated.
St. Mary's	unknown	unknown	27	1007	Angling	27	1007	Acid-impacted, surpluses assumed to equal the 1986-1990 average angling harvest.
Liscomb	unknown	unknown	0	157	Angling		157	Acid-impacted, surplus assumed to equal the 1986-1990 average angling harvest.
East (Sheet Harbour)	unknown	unknown	0	~50	Angling		62	Acid-impacted, surplus based on average number of smolts stocked and projected return rate. Surplus of 50 1SW salmon projected for 1992; >50 beyond 1992 as a result of increased stocking.
West (Sheet Harbour)	unknown	unknown	0	161	Angling		161	Acid-impacted, surplus assumed to equal the 1986-1990 average angling harvest.
Musquodoboit	400	400	0	385	Angling	11	259	Surplus for 1986-1990 based on sport catch, assumed exploitation rates and spawning requirements.
Gold	unknown	unknown	0	313	Angling		313	Acid-impacted, surpluses assumed to equal the 1986-1990 average angling harvest.
LaHave	unknown	unknown	28	2069	Angling	28	2069	Acid-impacted, surpluses assumed to equal the 1986-1990 average angling harvest.

Table 1. Atlantic salmon spawning requirements and average surplus to requirements (see attached map for location of rivers).

River Tributary	Spawning Requirements		Average Surplus to Requirements for all Users		Recent Harvests			Comments
	MSW	1SW	MSW	1SW		MSW	1SW	
Medway	unknown	unknown	10	631	Angling	10	631	Acid-impacted, surpluses assumed to equal the 1986-1990 average angling harvest.
Mersey	0	0	100	600	Angling		95	Acid-impacted, negligible natural production, surpluses based on average number of smolts stocked and average return rates. Surpluses projected for 1992 are 50 MSW and 600 1SW salmon.
Tusket	unknown	unknown	0	500	Angling		176	Acid-impacted, surplus based on average number of smolts stocked, average return rates and estimated returns from wild production. The surplus is derived mainly from hatchery stocking.
Shubenacadie	130	350	0	0	Angling		51	Management closure in effect during 1991 dependent on counts of adequate spawners in the Big Salmon River, N.B.; also subject to in-season review.
Stewiacke	310	800	0	0	Angling	11	394	Management closure in effect during 1991 dependent on counts of adequate spawners in the Big Salmon River, N.B.; also subject to in-season review.
Big Salmon River	420	280	0	0	Angling		76	Absence of surpluses based on counts, management closure in effect during 1991 dependent on counts of adequate spawners, subject to in-season review.
Saint John (at or above Mactaquac)	4400	3200	0	6370	Angling Food fishery	unknown 953	1802 381	Surplus for 1986-1990 based on direct evaluation of returns. Preliminary estimate of 1991 surplus of 125 MSW and 4800 1SW may be more realistic for 1992; subject to in-season review.
Nashwaak	1800	1700	23	674	Angling	9	469	Surpluses for 1986-1990 assumed to equal the average of two independent sets of angling statistics.



1. RESTIGOUCHE RIVER, N.B.
2. EEL RIVER, N.B.
3. NEPISIGUIT RIVER, N.B.
4. TABUSINTAC RIVER, N.B.
5a. NORTHWEST MIRAMICHI RIVER, N.B.
5b. SOUTHWEST MIRAMICHI RIVER, N.B.
6. RICHIBUCTO RIVER, N.B.
7. BUCTOUCHE RIVER, N.B.
8. MORELL RIVER, P.E.I.
9. EAST RIVER (PICTOU CO.) N.S.
10. POMQUET RIVER, N.S.
11. AFTON RIVER, N.S.
12. SOUTH RIVER (ANTIGONISH CO.), N.S.
13. WEST RIVER (ANTIGONISH CO.), N.S.
14. MARGAREE RIVER, N.S.
15. GRAND RIVER, N.S
16. BADDECK RIVER, N.S.
17. MIDDLE RIVER, N.S.
18. NORTH RIVER(VICTORIA CO.), N.S.
19. ST. MARYS RIVER N.S.
20. LISCOMB RIVER, N.S.
21. EAST RIVER, (SHEET HARBOUR), N.S.
22. WEST RIVER(SHEET HARBOUR), N.S.
23. MUSQUODOBOIT RIVER, N.S.
24. GOLD RIVER, N.S.
25. LAHAVE RIVER, N.S.
26. MEDWAY RIVER, N.S.
27. MERSEY RIVER, N.S.
28. TUSKET RIVER, N.S.
29. SHUBENACADIE RIVER, N.S.
30. STEWIACKE RIVER, N.S.
31. BIG SALMON RIVER, N.B.
32. SAINT JOHN RIVER, N.B.
33. NASHWAAK RIVER, N.B.
34. CONNE RIVER, NFLD.

Figure 1. Rivers in the Newfoundland Gulf and Scotia-Fundy regions with current or potential native food fisheries.

ANNEX 10

NORTH AMERICAN COMMISSION

NAC(92)9

CAFSAC REPORT
STATUS OF ATLANTIC SALMON STOCKS IN 1991

NAC(92)9

CAFSAC REPORT
STATUS OF ATLANTIC SALMON STOCKS IN 1991

Canadian Atlantic Fisheries
Scientific Advisory Committee

CAFSAC Advisory Document 92/3

INTRODUCTION

In its Advisory Document 91/15, CAFSAC suggested that conservation for Atlantic salmon be defined as:

> "That aspect of renewable resource management which ensures that utilization is sustainable and which safeguards ecological processes and genetic diversity for the maintenance of the resource concerned. Conservation ensures that the fullest sustainable advantage is derived from the resource base and that facilities are so located and conducted that the resource base is maintained."

The same document suggested that the operational translation of conservation for Atlantic salmon be based on the potential productivity of rivers using the target egg deposition rate of 2.4 eggs/m^2 of fluvial rearing habitat and, in addition for insular Newfoundland, 368 of eggs/hectare of lacustrine habitat. In Advisory Document 91/16, CAFSAC quantified conservation for 34 Atlantic salmon rivers and gave a first indication of potential surpluses to conservation for 1992, largely based on average surplus to conservation during 1986 to 1990. The present advisory document provides an update of the status of salmon stocks based on the results of the 1991 fisheries and research.

CAFSAC uses several sources of information to assess the status of Atlantic salmon stocks; the most important are derived from the fisheries, from counting fences and from mark-recapture experiments. The year to year comparison of the information from the fisheries is difficult because fishing success is influenced by environmental conditions such as water levels and temperatures in rivers or at sea. Counts of returning salmon at fishways, counting fences and estimates derived from mark-recapture studies are more reliable but they are not available for all rivers.

In this document, salmon are generally referred to in two size categories, small and large. For salmon in freshwater, small salmon refers to salmon less than 63cm in length. They are primarily mature virgin one-sea-winter (1SW) salmon (grilse) but may include some previous spawning grilse and virgin multi-sea-winter (MSW) salmon. Large salmon refers to salmon greater than or equal to 63cm and are primarily virgin MSW salmon with some repeat spawning grilse and MSW salmon. Salmon caught in the commercial fishery are categorized by fish buyers as small or large by weight. Generally salmon less than 2.7kg whole weight are graded as small and salmon greater than or equal to 2.7kg are graded as large salmon. The large salmon would be primarily MSW salmon but could also include some maturing and non-maturing 1SW salmon as well as previous spawners. Small salmon are primarily 1SW salmon, consisting of maturing and non-maturing components, as well as some previous spawners and two-sea-winter (2SW) salmon.

Atlantic Overview

There were no major changes in the regulations controlling the 1991 Atlantic salmon fisheries. Quotas for the Newfoundland commercial fishery, introduced in 1990, were again in place in 1991 although at lower levels in some Salmon Fishing Areas (SFAs) (Fig. 1). The bag limits in the Newfoundland recreational fisheries were reduced from 15 to 10 fish annually and some new native food fisheries were introduced. In-season closure of rivers due to low water conditions and/or conservation concerns and delays due to heavy ice conditions in the commercial fishery in most areas of Newfoundland-Labrador and the North Shore of Quebec may have had an effect on the catch of salmon. Cold water conditions have delayed migration timing in many areas and possibly affected abundance of fish in fisheries and overall marine survival. The 1991 provisional catch of 679 t for all sea-ages combined was the lowest recorded and about only half of the mean catch for the previous five years; both the small and large salmon components were the lowest recorded (Fig. 2).

Table 1 at the end of this document compares indicators of stock size for 1991 with 1990 and with the average for the previous 5-6 years in terms of the direction of changes greater than 10%. It shows 1991 values to be as bad or worst in most SFAs and for most indicators. The fishery for salmon at Greenland was also poor; less than 500 t from the quota of 840 t were caught in 1991. Indicators of abundance were the fourth lowest recorded at West Greenland since 1980. Low returns and catches of 1SW salmon in 1991 would suggest that returns of large salmon (both MSW and consecutive repeat spawners) to Canadian fisheries and rivers will be low in 1992.

Newfoundland Region Summary

In 1991 quotas remained in effect in SFAs 2-11 but were reduced in SFAs 3 and 4, while SFA 1 remained on an allowance catch. The fishing season started on June 5th and ended in each SFA when the quota was caught or, if the quota was not caught, on October 15th. Also, SFA 1 was extended south to Fish Cove Point and SFA 2 was subdivided. Otherwise, fishing regulations were the same as in 1990. It was illegal to retain Atlantic salmon caught as by-catch in non-salmon commercial fishing gear and the mandatory carcass tagging program remained in effect. The numbers of commercial fishermen and gear units in Labrador were similar to 1990; in insular Newfoundland numbers of fishermen and gear units decreased by 3%.

For the recreational fishery, regulations in 1991 were the same as in 1990 with exception that the season bag limit was reduced from 15 to 10 fish. The mandatory release of large salmon continued in insular Newfoundland, however, this regulation continued not to apply to Labrador. The maximum number of fish that could be retained per day was two and the maximum number that could be hooked and released was four. Angling ceased for the day when one or the other limit was attained. The mandatory carcass tagging program remained in effect. On a river specific basis, recreational catch in Conne River was limited to an allocation of 100 fish. A number of rivers were closed to angling as a result of low water levels in 1991.

In Labrador, the commercial fishery lasted the entire season, closing on October 15th without the quotas having been taken. The catches of both small and large salmon were the lowest on record. In insular Newfoundland, the fishery lasted the entire season in only SFA 4

without the quota being taken. However, in most SFAs final catch records revealed that the quotas were not reached. Cumulative catches of small and large salmon to closing dates in 1991 indicated that catches in 1991 were below the average catches to the same dates for 1984-89 in nearly all SFAs.

Recreational catches of small and large salmon in Labrador in 1991 were below those in 1990 and below the 1974-83 and 1984-89 means. In insular Newfoundland, the catch of small salmon decreased compared to 1990 and was about one-half of the 1974-83 and 1984-89 means. Catch per unit of effort in all SFAs were also lower in 1991 than in 1990 and considerably below the 1974-83 and 1984-89 means.

Counts of small salmon at fishways and counting fences in 1991 were also low in nearly all cases compared to 1990 and the 1984-89 means. Small salmon counts in 1991 compared to 1990 decreased at 12 out of 14 counting facilities. The changes ranged from -76% on Biscay Bay River to +39% on Northeast Brook with an average decrease -29% on all fishways. Small salmon counts in 1991 compared to the 1984-90 average were different at 12 out of 13 counting facilities and ranged from -82% on Biscay Bay River to +13% on Rocky River with an average decrease of -49% on all fishways. This suggests that if the 1991 management measures had not been in place controlling catches, escapements might have been lower than indicated.

In Labrador, in spite of a delayed commercial fishery, angling catches of both small and large salmon were by far the lowest recorded since 1974. Low angling catches coupled with the fact that commercial catches were the lowest on record with the fishery lasting the entire season, indicate that the abundance of both small and large salmon in Labrador in 1991 was the lowest in recent years.

In insular Newfoundland, the timing and duration of closures of rivers to angling and the numbers of rivers involved in SFAs 9-11 confound comparisons of angling catches with previous years. Also, in SFA 11, the restricted catch in Conne River is a complicating factor. There were no closures in SFAs 3 and 4 and only a few in August in SFA 5, hence angling data can be regarded as representative for these areas. Counts of small and large salmon at counting facilities in SFAs 9-11 however can be used as indicators of abundance for rivers along the south coast. Overall, the angling catches and counts at counting facilities in conjunction with the lowest commercial catches on record, suggest that the abundance of both small and large salmon in insular Newfoundland in 1991 was the lowest in recent years.

STOCK: Exploits River, SFA 4
LIFE STAGE: 1SW and MSW
TARGET: 95.9 million eggs (equivalent to 56,670 1SW salmon)
Lower Exploits 16.4 million eggs
Middle Exploits 64.2 million eggs
Upper Exploits 15.4 million eggs

Year	1986	1987	1988	1989	1990	1991	MIN[1]	MAX[1]	Mean[1]
Harvest									
- 1SW	2057	1935	1731	577	917	1045	577	2057	1443
- Broodstock	2585	4217	5017	353	3839	1400	353	5017	4002
Returns									
- 1SW	10320	9481	9469	7557	6995	5659	6995	10320	8764
- Large	353	310	147	89	122	99	89	353	204
% of Target Met									
- Lower Exploits	68	65	61	48	47	33	47	68	58
- Middle Exploits	9	9	12	14	12	N/A	9	14	11
- Upper Exploits	72	96	125	119	88	N/A	25	119	100

[1] For the period 1986 to 1990

Data and methodologies: Total returns to river are based on the count at Bishop Falls fishway plus recreational catch below Bishop Falls.

State of the stock: The Lower Exploits is averaging 58% of target egg based on natural spawning. The Middle Exploits is averaging 11% of target egg based on limited natural spawning and fry releases. The Upper Exploits is averaging 100% of target egg based on fry releases.

STOCK: Gander River, SFA 4
LIFE STAGE: 1SW salmon and MSW
TARGET: 46.211 million eggs (~ 21,828 1SW fish)

Year	1986	1987	1988	1989	1990	1991	MIN[1]	MAX[1]	Mean[1]
Harvest Recreational - 1SW	2361	1444	2686	1173	1155	1180	1155	4578	2459
Counts - Large				451	508	670			
- 1SW				7743	7520	6445			
Returns - Large				451	508	670			
- 1SW				7743	7740	6745			
% of Target Met				35	36	33			

[1] For 1974 to 1991. Data for 1987 omitted due to river closures.

Catches: Catches have ranged from 1,155 to 4,578 small salmon during the past 17 years (1974-91). Catches have declined during the 1980s (1981-90). Effort has remained relatively steady.

Data and methodology: Complete counts of salmon are obtained at a fish counting fence, 1989-91, and have historically been counted at a fishway located on a tributary, Salmon Brook. Commercial landings were available for communities in Gander Bay. Exploitation rates for the recreational fisheries, 1989-91, were used in a simulation analysis to derive probable average returns, 1979-88, relative to the target requirements. Commercial landings were compared to the recreational landings and effects of closing fisheries on egg deposition was evaluated. A preliminary review was conducted of the discharge of the Gander River during the normal low flow period, July - September 1987-90.

State of the stock: The percentage of target egg deposition achieved in 1991 was 33% which is similar to that attained in 1989 and 1990. On average over the years 1979 to 1988, 60-65% of the target egg requirement has been achieved. The increase in landings in the commercial fisheries appears to have contributed to the decline in returns to the Gander River, 1980-89. The low abundance of salmon in 1991 may be at least partially due to the unusually low river discharges in 1987 and 1988, and to the unusual marine environmental conditions during the winter 1990-91.

STOCK: Terra Nova River, SFA 5
LIFE STAGE: 1SW salmon
TARGET: Total watershed: 14.30 million eggs (7,094 1SW salmon)
Below Mollyguajeck Falls: 5.67 million eggs (2,814 1SW salmon)

Year	1986	1987	1988	1989	1990	1991	MIN[1]	MAX[1]	Mean[1]
Harvest									
Recreational									
- Small	620	546	682	357	624	448	243	850	559
Counts									
- Small	1051	974	1737	1138	1149	883	569	1737	1108
- Large	140	56	206	142	144	114	19	206	107
% of Target Met									
Total watershed	19	15	30	20	20	16	15	30	20

[1] Recreational catch for the period 1974 to 1991. Data for 1987 omitted due to river closures resulting from drought conditions and are not included in calculations of MIN, MAX, and Mean. Means for fishway counts are from 1979 to 1991. Summary for targets here applies from 1984.

Catches: Catches have ranged from 243 to 850 small salmon during the past 17 years (1974-91). Catches in recent years have declined relative to those during the late 1970s and early 1980s. Rod days of effort have generally increased over time.

Data and methodology: Complete counts of fish are available from a fishway on the lower section of the river.

State of the stock: Target egg deposition requirements have never been achieved on Terra Nova River either for the entire watershed, or for the area below Mollyguajeck Falls. On average since 1984, less than 50% of the target egg requirement has been achieved for the area below Mollyguajeck Falls, and only 20% relative to the entire watershed.

STOCK: Middle Brook, SFA 5
LIFE STAGE: 1SW salmon
TARGET: 2.34 million eggs (1,012 1SW salmon)

Year	1986	1987	1988	1989	1990	1991	MIN[1]	MAX[1]	Mean[1]
Harvest Recreational - Small	789	187	708	165	349	278	165	708	461
Counts - Small	1036	914	772	496	744	562	496	2415	1135
- Large	15	19	14	19	13	14	13	91	34
% of Target Met	90	90	66	50	74	51	50	134	83

[1] Recreational catch for the period 1974 to 1991. Data for 1979 and 1987 omitted due to river closures resulting from drought conditions and are not included in calculations of MIN, MAX, and Mean. Means for fishway counts are from 1980 to 1991 excluding 1987 where counts are incomplete. Summary for targets here applies from 1984.

Catches: Catches have ranged from 165 to 708 small salmon during the past 17 years (1974-91). Rod days of effort peaked during the mid-1980s but has declined substantially in recent years.

Data and methodology: Complete counts of fish are available from fishways.

State of the stock: Target egg deposition requirements were met from 1980-84 with the percentage of the target achieved declining, on average, annually to only 50% in two of the last three years.

STOCK: Biscay Bay River, SFA 9
LIFE STAGE: 1SW salmon
TARGET: 2.95 million eggs (1,134 1SW salmon)

Year	1986	1987	1988	1989	1990	1991	MIN[1]	MAX[1]	Mean[1]
Harvest									
Recreational									
- Small	393	101	349	102	232	10	10	424	234
Counts									
- Small	2516	1302	1695	889	1657	394	394	2516	1837
- Large	101	106	58	104	73	35	35	101	73
% of Target Met	208	119	126	87	128	39	39	208	140

[1] Recreational catch for the period 1974 to 1991. Data for 1987 omitted due to river closure resulting from drought conditions. Fence counts for 1985, 1987, and 1989 are minimum values due to incomplete counts and are not included in calculation of MIN, MAX, or Mean. Percentage of target met reflects contribution of both small and large salmon.

Catches: Catches have ranged from 10 to 424 small salmon during the past 17 years (1974-91). Rod days of effort have been relatively stable during the past decade.

Data and methodology: Complete counts of fish are obtained from a fish counting fence in operation since 1983.

State of the stock: Since 1983, from 39% to 208% of the target egg deposition was achieved. Including those years even where incomplete counts were obtained, the target egg requirement has been met or exceeded in all years but 1991. In 1989, at least 87% of the target was achieved.

STOCK: Rocky River, SFA 9
LIFE STAGE: 1SW
TARGET: 3.4 million eggs (equivalent to 881 1SW salmon)

Year	1987	1988	1989	1990	1991	MIN[2]	MAX[2]	Mean[2]
Returns	81	319	177	418	227	81	418	249
% of Target Met	23[1]	36	20	47	26	20	47	32

[1] Includes 124 female grilse transferred into Rocky River
[2] For the period 1987-90

Catches: The recreational fishery is closed on this river.

Data and methodology: Complete adult counts are available from a trap installed in the fishway. Smolt counts in 1990 and 1991 have totalled 8,287 and 7,732 smolts respectively. The 1990 smolt to adult survival after commercial exploitation was 2.5%. The Rocky River is the site of an enhancement project that established a salmon run in a river, that has a waterfall at the mouth of the river, which was a complete barrier to migration. Passage around this fall was provided through fishway construction. The Rocky River was stocked with Atlantic salmon from 1983-1987. The first returns to the fishway were realized in 1987.

State of the stock: On average the watershed is receiving about 30% of target egg requirements.

Forecast: Based on the 1990 smolt to adult survival of 2.5% after commercial exploitation the forecast is for 193 1SW fish in 1992. A comparable return rate will only yield 22% of target egg requirements in 1992.

STOCK: Northeast River, SFA 10
LIFE STAGE: 1SW salmon
TARGET: 0.72 million eggs (equivalent to 224 1SW salmon)

Year	1986	1987	1988	1989	1990	1991	MIN[1]	MAX[1]	Mean[1]
Harvest Recreational - Small	234	36	186	210	173	19	19	349	168
Counts - Small	725	325	543	706	551	353	224	725	439
- Large	39	16	11	15	25	8	0	56	26
% of Target Met	346	152	209	277	251	161	152	346	228

[1] Recreational catch for the period 1974 to 1991. Data for 1987 omitted due to river closures resulting from drought conditions. Fishway counts for 1975, 1981, 1982 and 1987 are minimum values due to incomplete counts. These years are omitted from calculation of MIN, MAX, and Mean. Percentage of target met reflects contribution from both small and large salmon.

Catches: Catches have ranged from 19 to 349 small salmon during the past 17 years (1974-91). Rod days of effort peaked during the early 1980s (1984-88) but has declined substantially in recent years.

Data and methodology: Complete counts of fish are available from a fish counting fence.

State of the stock: Target egg deposition requirements have been exceeded in all years including 1991.

STOCK: Conne River, SFA 11

TARGET: 7.8 million eggs (~ 4,000 small salmon) calculated as fluvial area x 2.4 eggs/m^2 and eggs/recruit applied to total population as derived from assumed commercial exploitation rates.

Year	1986	1987	1988	1989	1990	1991	MIN[1]	MAX[1]	Mean[1]
Harvest									
Native[3]									
- Large	3	0	2	1	11	0	0	11	3
- Small	519	18	607	381	959	286	18	959	462
Recreational[2]									
- Small	2060	1598	1544	1036	767	100	767	2060	1401
Returns									
- Large	412	516	420	320	372	87	320	516	408
- Small	8302	10155	7627	4968	5377	2410	4968	10155	7286
Escapement									
- Large	396	488	418	319	361	87	319	488	396
- Small	5428	7823	5567	3609	3765	2062	3609	7823	5238
% of Target Met	145	214	159	103	112	53	103	214	131

1 For the period 1986-90; 1991 data preliminary.
2 Angling catch are DFO statistics.
3 Native catch in salt water includes some salmon from other rivers; food fishery quota of 1,200 small fish in effect since 1986.

Data and methodology: Complete counts of fish are obtained from a fish counting fence first used in 1986. Smolts used in adult forecasts are monitored by mark-recapture estimates.

State of the stock: On average for the years 1986-1990 the target has been exceeded, however, in 1991 only 53% of the target was achieved.

Forecast: With estimated output of 64,723-90,533 smolts, a simulation approach yielded an expected return of 5,529 (3,500-7,244) 1SW salmon in 1992 with a high probability that returns in 1992 should be higher than those observed in 1991. Specifically, there is an 80% chance that at least 4,960 fish should return in 1992, but only a 20% probability that more than 5,900 fish will return. Average surplus to spawning requirements between 1986-90 and after removals have been estimated at 1,238. The surplus forecast for 1992 is based on returns no higher than the median forecast estimate of 5,529 1SW fish.

Gulf Region Summary

Commercial fishery access to Atlantic salmon stocks in Newfoundland-Labrador SFAs 12, 13 and 14 in 1991 were regulated by the following restrictions.

Licences SFA	Quota	Season	Number of Commercial Fishermen	
			1991	1990
12	-	Closed	-	-
13	25 t	June 5 - July 16	111	112
14(a) - N. Peninsula	35 t	June 5 - October 15	201	203
14(b) S. Labrador	15 t	June 5 - October 15	58	59
Total	75 t		370	374

SFA 14(B) harvests from north of Henley Harbour to Cape Charles were deducted from the Labrador, Newfoundland Region quota in 1991 since these catches were made by fishermen from SFA 2 who move into SFA 14(B) to fish.

Recreational fishery regulations in 1991 reduced the seasonal bag limit from 15 to 10 fish and similar to previous years required that all salmon greater than or equal to 63 cm be released in SFAs 12, 13 and 14(A). Recreational seasons were unchanged from 1990. Based on 1991 recreational harvests, returns of small and large salmon were down from 1990 in SFA 12, similar to the 1974-83 mean and below the 1984-89 mean. Large salmon harvests in 1991 indicate greater decrease in abundance relative to small salmon.

Based on commercial harvests, returns of small salmon to SFA 13 in 1991 were similar to 1990, 18% above the 1974-83 mean but below the 1984-1989 mean. River escapement of small salmon in 1991 was below 1990, 1974-83 and 1984-89 means as indicated by recreational harvests. Large salmon harvests in 1991 commercial and recreational fisheries indicate greater decrease in abundance relative to small salmon. Increased commercial harvest of small salmon in 1991, compared to the 1974-83 mean, occurred only in the southern portion of SFA 13 (Statistical Area K).

In SFA 14(A) commercial and recreational small salmon catches in 1991 were down from years of similar season durations prior to quota introductions in 1990. Only 51% of the 35 t commercial quota was caught in 1991, perhaps because of a delay in fishing effort due to inshore ice conditions. Large salmon hook and release recreational catches were up from the 1984-89 mean, mostly in Portland Creek.

Returns of adult salmon to Torrent River fishway and Wester Arm Brook counting fence in SFA 14(A) were also down in 1991, compared to previous years, consistent with lower commercial and recreational catches.

Commercial small salmon catches in SFA 14(B) suggest a low stock abundance in 1991 compared to years before quota introduction. Higher commercial catches in 1991 than 1990 of small and large salmon are the result of an extended season duration in 1991. The 1990 season was closed because the combined SFA 14(A) + (B) quota had been reached. In 1991, 15% of the small and 43% of the large salmon commercial catches were taken after the 1990 season closure date of week 31. Small salmon recreational harvests in SFA 14(B) in 1991 were slightly above 1990 and just slightly below long-term means. Large salmon commercial and recreational catches indicate a continuation of a trend of declining abundance since 1978, and evident in recreational catches since 1989.

SFA 17, Prince Edward Island

Recreational catch statistics were not collected for PEI in 1991. Returns of 1SW salmon to the Morrell River were 252 fish, 31% of the five year mean.

SFA 18, Gulf Shore, Nova Scotia

Estimates of angling catches of bright 1SW salmon in SFA 18 were 1,230 fish, which was equal to 1990 and 25% greater than the previous five year mean.

The Margaree River is the principal river in this SFA. Angling catches up to October 15, estimated from creel surveys were 35% of 1990 values for MSW salmon and 153% of 1990 values for 1SW salmon. Total returns in 1991 were 1,909 1SW salmon and 3,484 MSW salmon. While these are below 1990 values, they are similar to the highest returns since 1984. Egg depositions were 326% of egg requirements in 1991 and have exceeded target requirements each year since 1985.

STOCK: Humber River - Bay of Islands, Newfoundland (SFA 13)
TARGET: 27.673 million eggs (equivalent to 18,000 small, 600 large salmon) calculated as rearing area x 2.4 eggs/m^2

Year	1987	1988	1989	1990	1991	MIN[1]	MAX[1]	Mean[1]
Harvest								
Angling								
- Small	3074	4042	1217	3054	1431	1217[2]	5102[2]	2564
Bay of Islands								
Commercial								
- Small[3]	8060	9989	4211	4983	2007	2007	9989	5850
- Large[3]	728	824	815	579	244	244	824	638
Returns								
- Small	12,296	16,168	4868	12,216	5724	4868	16,168	10,254
- Large	861	1132	341	855	401	341	1132	718
Escapement								
- Small	9222	12,126	3651	9162	4293	3651	12,126	7691
- Large	861	1132	341	855	401	341	1132	718
% of Target Met	58	77	23	58	27	23	77	49

[1] For the period 1987-1991.
[2] For the period 1976-91.
[3] Small - Commercial refers to salmon less than 2.7 kg round weight.
Recreational refers to salmon less than 63 cm fork length.
Large - Commercial refers to salmon greater than or equal to 2.7 kg round weight.
Recreational refers to salmon greater than or equal to 63 cm fork length.

Data and methodology: Current assessment of state of stock based on estimates of 1SW angling catches as estimated by DFO field personnel. MSW salmon catches assumed to equal 7% of 1SW catches. Angling exploitation rates were estimated in 1990 and 1991 and a value of 0.25 was used for 1987 to 1991 estimates of returns.

State of the stock: Egg depositions by all salmon have been less than 50% of target in the last 5 years. If commercial fisheries of Bay of Islands had been closed and recreational fisheries of Humber River had been closed, egg depositions would have been 48% in 1991 to as high as 159% in 1988.

STOCK: Restigouche River, SFA 15
LIFE STAGE: Juveniles (0+, 1+, 2+), 1SW and MSW salmon
TARGET: 71.4 million eggs (12,200 MSW, 2,600 1SW salmon)

Year	1986	1987	1988	1989	1990	1991	MIN (1970-91)	MAX (1970-91)	Mean (1986-90)
Harvest									
Native									
- MSW	1576	1902	1430	1649	1606	1111	23	18,180	1633
- 1SW	30	100	73	163	136	19	0	7339	100
Recreational									
- MSW	1693	1073	1207	1336	1146	1181	688	6707	1291
- 1SW	5413	5005	6776	3301	4324	2522	896	6776	4964
Spawning Escapement[1]									
- MSW (x 1000)	11-19	7-13	10-17	8-13	6-11	5-9	1-2	11-19	8-15
- 1SW (x 1000)	5-13	5-12	7-16	3-8	4-10	3-6	1-2	7-16	5-12
Returns[1]									
- MSW (x 1000)	16-26	12-18	15-23	12-19	10-16	9-14	6-9	23-26	13-21
- 1SW (x 1000)	13-21	12-19	16-26	8-13	10-17	6-10	3-4	16-26	12-19
% of Target Met[1]	89-159	59-105	83-146	63-113	53-95	43-78	9-20	89-159	70-124
Counts by canoe (spawners)									
- MSW	9542	8535	9520	12,362	-	7513	2397[2]	12,362[2]	9990
- 1SW	5190	3930	3861	3970	-	3836	986[2]	5190[2]	4238
Upsalquitch barrier									
- MSW	1166	1000	993	894	946	930	301[3]	1166[3]	1000
- 1SW	1738	1557	1121	1051	1324	1267	430[3]	1738[3]	1358
Causapscal barrier									
- MSW			505	605	456	451			522[4]
- 1SW			49	7	37	9			31
Juvenile densities[5]									
0+	23.9	42.0	53.2	72.1	53.2	106.5	5.2	106.5	48.9
1+	7.5	9.4	6.1	12.1	12.9	12.3	2.4	12.9	9.6
2+	2.8	4.7	2.1	1.9	3.1	2.9	0.4	4.7	2.9

1 Range given reflects uncertainty of angling exploitation rate (assumed to lie between 0.3 and 0.5), from which spawning escapement (and therefore eggs), and total returns are derived.
2 MIN, MAX, for years 1982 to present.
3 MIN, MAX, for years 1980 to present.
4 For 1SW and MSW counts at Causapscal River, average is 1988-1990 rather than 1986-90.
5 Number per square meter, from electrofishing surveys at 15 standard sites (8 in 1991). MIN, MAX for years 1972 to present.

Catches: Angling catches of MSW salmon in 1991 was within 10% of five year mean and less than 50% of five year mean for 1SW salmon.

Data and methodology: Spawning escapement, losses to poaching and disease, and total returns are all calculated from angling catch divided by exploitation rate. River harvest

includes mortalities associated with catch and release and broodstock removals. Estuary harvest is native catch. Exploitation rate has not been measured on the Restigouche River since 1977, but is assumed to lie between 0.3 and 0.5. Spawning escapement has also been estimated by canoe surveys since 1982, but was prevented in 1990 by high water. Salmon are counted at headwaters protection barriers on the Upsalquitch River (since 1980) and Causapscal River (Matapedia) (since 1988). Juvenile salmon densities were estimated from electrofishing at 15 standard sites (since 1972) except in 1991 when only 8 sites were fished. The MIN-MAX years are taken from 1970-91 unless otherwise footnoted.

State of the stock: Because angling exploitation rates have not been measured in recent years, true spawning escapements are unknown. Potential indices of spawning escapement (canoe counts, barrier counts, and juvenile densities) suggest that the stock is larger now than it was in early 1980s.

Forecast: Based on the mean returns from 1987-91, between 12 and 18 thousand MSW and between 10 and 17 thousand 1SW salmon are expected to return in 1992. There is no evidence to suggest that returns will be significantly greater or smaller than average. The ranges given reflect upper and lower exploitation rates used in calculating returns, not confidence limits.

STOCK: Miramichi River, SFA 16
LIFE STAGE: Juveniles (0+, 1+, 2+), 1SW and MSW salmon
TARGET: 132 million eggs (23,600 large, 22,600 small salmon)

Year	1986	1987	1988	1989	1990	1991	MIN[1]	MAX[1]	Mean[2]
Harvest									
River[3]									
- MSW	1051	1344	687	1593	879	744	449	12,060	1111
- 1SW	28,135	22,023	31,589	26,815	23,609	11,248	8700	31,589	26,434
Estuary[4]									
- MSW	18	21	78	78	107	82	1	18,268	60
- 1SW	16	16	52	31	15	2	0	5512	26
Escapement									
Spawning									
- MSW (x 1000)	30	18	21	16	28	29	4	33	22
- 1SW (x 1000)	89	63	90	48	60	50	13	89	70
Returns									
- MSW (x 1000)	31	19	22	17	29	30	9	52	24
- 1SW (x 1000)	118	85	122	75	83	61	24	122	96
% of Target Met	178	142	150	97	151	158	23	192	144
Juvenile densities[5]									
0+	23.9	74.5	95.1	72.2	94.6	44.6	9.4	95.1	72.1
1+	12.2	13.1	13.9	18.4	12.4	14.3	3.0	18.4	14.0
2+	3.9	2.5	1.8	2.6	2.9	10.4	0.8	10.4	2.7

1 MIN, MAX over the period 1971 to present unless stated otherwise.
2 For the period 1986-90.
3 River harvest includes angling, native fishery above Millbank, mortalities associated with catch and release, broodstock removals, Millbank trap mortalities, and samples.
4 Estuary harvest is native catch from 1986-91.
5 Number per square meter, from electrofishing surveys at 15 standard sites (3 in 1991).

Catches: Recreational catches have ranged from 2,240-14,266 MSW and 8,390-30,620 1SW salmon during the past 10 years. Effort (rod days) has increased over recent years while catches were highest from 1985-90. Catches in 1991 of MSW and 1SW salmon were the lowest since 1984 and 1983, respectively.

Data and methodology: An index trap has been operated on the Miramichi River since 1954. The trap efficiency, estimated in 1972-73, changed in the early 1980s when the river channel was altered and the trap was recalibrated in 1985-87. Estimated returns from the trap efficiency and mark-recapture have been similar in recent years.

State of the stock: Target egg deposition rates have been almost met or exceeded in each of the last seven years. Previous spawners have both increased in number and proportion of the total adult returns in recent years.

Forecast: Approximately 29,000 MSW salmon are forecasted to return to the Miramichi river in 1992. The probability of MSW returns being less than the spawning requirements is 26%, the probability of returns exceeding spawning requirements by up to 10,000 MSW salmon was 44% and the probability of returns exceeding the spawning requirements by more than 10,000 MSW salmon is 30%.

STOCK: Margaree River (SFA 18)
TARGET: 6.714 million eggs (1,036 MSW, 582 1SW salmon) calculated as area x 2.4 eggs/m^2

Year	1986	1987	1988	1989	1990	1991	MIN[2]	MAX[2]	Mean[2]
Harvest									
Recreational									
- MSW[1]	23	40	18	23	85	30	16	704	183
- 1SW	295	403	589	208	256	391	21	899	161
Native									
- MSW	-	-	-	-	-	1	-	-	-
- 1SW	-	-	-	-	-	2	-	-	-
Returns									
- MSW	3616	4015	1688	2289	11,144	3484	167	11,144	1196
- 1SW	1096	1478	2209	768	997	1909	72	3061	565
Spawning Escapement									
- MSW	3578	3975	1670	2266	11,067	3453	118	11,067	1013
- 1SW	801	1075	1620	560	730	1507	51	2162	404
% of Target Met	347	387	165	217	1067	334	10	1067	96

[1] MSW angling catch for 1985 to 1991 is hook-and-release mortality at 5%.
[2] Mean, MIN, and MAX are for 1947 to 1990.

Data and methodology: Summer and fall (after August 31) run components occur in the river with the fall run comprising over 80% and 45% of MSW and 1SW returns in recent years. Current assessment of state of stock based on angling catches including kept and released 1SW salmon and hook and released MSW salmon as estimated by DFO field personnel prior to 1987 and by on-site creel surveys since 1987. Angling exploitation rates are those derived for the fall angled 1SW and MSW salmon from the Margaree River for the years 1988 to 1990 (avg. of 0.18 for MSW and 0.26 for 1SW), assumed exploitation rate of 0.29 for summer angled MSW and 1SW salmon. For 1991, an integrated exploitation rate of 0.17 for MSW and 0.19 for 1SW was used for both summer and fall angled fish.

State of the stock: Egg depositions by MSW salmon have exceeded target requirements by 137% to 1063% since 1985. The summer run component has increased in size since the 1970s but remains variable in size depending upon river conditions in the summer.

Forecast: Based on estimates of egg depositions in recent years, returns in the next five years should remain well above target spawning requirements.

Scotia-Fundy Region Summary

Various indices of abundance in 1991 were derived from the recreational fisheries by comparing the 1991 value with the average for previous periods. The results are summarized in the table below:

1991/1986-90 Average					1991/1981-90 Average
SFA	Retained 1SW	Released MSW	Effort	CPUE 1SW	Retained 1SW
19	.54	.68	.77	.71	.54
20	.60	.57	.74	.82	.66
21	.16	.28	.51	.30	.19
23	.50	N/A	.47	1.21	.61

All indices except the catch per unit of effort in SFA 23 suggest lower abundance in 1991 compared with previous year's average. All rivers in the inner Bay of Fundy (portions of SFA 22 and 23) were closed to angling because of low salmon abundance.

Counts of wild adult salmon at most counting facilities in SFAs 19, 20, 21 and 23 were down from those of 1990 and the previous 5- and 10-year means. Wild 1SW counts on the Liscomb (SFA 20) were 68% of the 1986-90 mean, those on the LaHave (SFA 21) were 24% of the mean and those on the Saint John (SFA 23) were 79% of the mean. Wild MSW counts were 48% of the 1986-1990 mean on the Liscomb, 45% on the LaHave and 116% on the Saint John. In-river counts of salmon in the Middle (SFA 19), Big Salmon and Alma (SFA 23) rivers were down from those of 1990 while an index of escapement for the Stewiacke River was up from that of 1988-1990.

The Middle (SFA 19), Alma and Big Salmon rivers, and Saint John above Mactaquac in SFA 23 did not achieve target spawning requirements. Escapement above Grand River Falls (SFA 19) was 0.9 eggs/m^2; the potential egg deposition above Morgan Falls on the LaHave River (SFA 21) was 2.5 eggs/m^2 - possibly the lowest since 1976. Interim target requirements for the Liscomb and LaHave rivers have yet to be established because they are acid-impacted. Escapement to the Petitcodiac and St. Croix rivers (SFA 23) was extremely low.

The percentage return of 1SW fish from hatchery smolts to the LaHave counting facilities was the lowest of the 13-year record while it was the third lowest on the Liscomb. Survival of Saint John River smolts increased over the previous year, but was the second lowest of the 16-year record. MSW return rates on the LaHave, Saint John and Liscomb rivers were among the lowest of the series.

Hatchery fish contributed 29% of the MSW and 14% of the 1SW potential spawning escapement above Mactaquac on the Saint John, 23% of MSW and 37% of 1SW fish above Liscomb Falls on the Liscomb River, 23% of the MSW and 18% of the 1SW salmon above

Morgan Falls on the LaHave River and 45% of all salmon above the Grand River Falls on Grand River.

Forecasts indicate that wild MSW salmon counts in 1992 will be about the same as the 1991 count at Liscomb Falls and 65% of the 1991 count at Morgan Falls on the LaHave River. The estimated return of wild MSW salmon destined for Mactaquac on the Saint John River is expected to be 87% or 94% (depending on method) of that of 1991. Wild 1SW returns to Mactaquac in 1992 are projected to be 92% or 121% (depending on method) of the 1991 estimated return.

STOCK: Grand River, SFA 19
LIFE STAGE: 1SW and repeat 1SW, limited 2SW and repeat 2SW
TARGET: 1.1 million eggs

Year	1986	1987	1988	1989[2]	1990	1991[2]	MIN[1]	MAX[1]	Mean[1]
Harvest									
Native					24	39			
Recreational									
- Grilse	360	342	338	307	416	115	115	542	385
- Salmon	194	107	105	74	98	15	15	194	138
Broodstock			33	25	18	19			
Counts									
- Grilse	-	-	554	512	527	234			
- Salmon	-	-	31	25	27	18			
% Hatchery	N/A	N/A	N/A	N/A	43	45			
Correction for By-pass									
- Grilse	-	-	55	51	52	176[6]			
- Salmon	-	-	54	19	20	14			
Total above fishway	-	-	694	607	626	442			
Population below fishway (est)	-	-	143	UK	UK	UK			
% Angled above	-	-	UK[3]	42[4]	31[4]	31 (1990)			
Required spawning escapement	-	-	539	545	545	545			
Estimated escapement	-	-	736	453[5]	442[5]	348[5]			
% of Target Met	-	-	136	83	83	64			

1 For the period 1985-1990; not shown where only 1988-1990 data is available.
2 In-season variation closures.
3 20% assumed angled above fishway.
4 Determined from post-season phone survey.
5 Above fishway in relation to entire river.
6 1991 by-pass rate for fish less than 63 cm.

Catches: Have ranged from 422 fish in 1984 to 115 fish in 1991, the period since the Nova Scotia licence-stub return system.

Data and methodology: Counts and scale samples are taken at the fishway 10.2km above the head of tide on the main river. By-pass of fish ascending the falls was estimated in 1989 at 9% for fish less than 63 cm and 43% for fish equal or greater than 63 cm but may have been different in 1991 when flood conditions followed a prolonged drought. The 1991 by-pass rate for grilse of 43% was estimated from broodstock collected above the fishway (8 of 14 grilse were previously marked). Numbers below the fishway were estimated from redd counts in 1988 only.

State of the stock: The target spawning escapement for the Grand River has not been met during the past three years, based upon the number of salmon estimated to be spawning above the fishway.

STOCK: Liscomb River above Liscomb Falls fishway, SFA 20
LIFE STAGE: 1SW, MSW salmon of both wild and hatchery origins
TARGET: Under development for this acid-stressed river

Year	1986	1987	1988	1989	1990	1991	MIN[1]	MAX[1]	Mean[1]
Harvest									
Recreational									
- 1SW[2]	234	289	138	65	177	68	65	289	164
Counts									
- Wild 1SW	736	1614	477	532	955	586	477	1614	804
- Wild MSW	117	88	76	75	44	38	44	117	81
- Hatchery 1SW[3]	766	523	431	288	438	178	175	766	437
- Hatchery MSW	108	54	44	71	22	22	22	108	58
- Total	1727	2279	1028	966	1459	824	818	2279	1380
Egg deposition/m² [2 3]	2.1	2.5	1.2	1.2	1.6	0.9	1.0	2.5	1.6
Returns									
- 1SW (%)	2.59	2.75	1.38	0.60	1.56	0.79	0.35	2.75	1.54
- MSW (%)	0.22	0.18	0.23	0.23	0.05	0.08	0.35	0.23	0.16

[1] For the period 1985-1990
[2] Below fishway
[3] Above fishway

Catches: No retention of MSW fish since 1984; 1SW catches (1984-1991) have ranged from 65 (1989) to 289 (1987) with 68 angled in 1991.

Data and methodology: Counts of adult fish are obtained at Liscomb Falls fishway.

State of the stock: Egg depositions were the lowest since 1985; a significant contribution to egg deposition comes from hatchery-origin fish of Liscomb River stock.

Forecast: An annually-updated relation between wild 1SW returns in year t and wild MSW returns in year t+1 predicts a return of 54 wild MSW salmon (90% C1 27-81) in 1992.

STOCK: LaHave River above Morgan Falls Fishway, SFA 21
LIFE STAGE: 1SW and MSW salmon of both wild and hatchery origins
TARGET: Under development for this acid-stressed river

Year	1986	1987	1988	1989	1990	1991	MIN[1]	MAX[1]	Mean[1]
Harvest									
Recreational									
- 1SW[2]	1844	2562	1585	2411	2008	227	1683	2562	2016
Counts									
- Wild 1SW	1579	2529	2464	2087	1861	495	1343	2529	2037
- Wild MSW	584	532	380	511	596	236	380	638	542
- Hatchery 1SW[3]	135	573	1026	443	402	109	102	1026	392
- Hatchery MSW[3]	78	79	59	183	118	90	59	183	99
- Total	2386	3713	3929	3224	2977	930	2160	3929	3070
Returns									
- 1SW (%)	2.42	2.45	3.92	1.89	1.72	0.87	1.42	3.92	2.30
- MSW (%)	0.68	0.97	0.23	0.61	0.39	0.22	0.23	0.97	0.53

[1] For the period 1985-1990.
[2] Mostly below the fishway.
[3] Mostly as a result of smolt releases.

Catches: Catches are for the entire river rather than only those from the stock above Morgan Falls. No retention of MSW fish since 1984.

Data and methodology: Spawner counts are made at a fishway at a natural falls.

State of the stock: Salmon counted over Morgan Falls in 1991 were the fewest since 1976 but had the potential to deposit 2.5 egg/m^2. However, the adequacy of 2.5 egg/m^2 under conditions of acid stress is uncertain at this time.

STOCK: Saint John River, N.B. (above Mactaquac) SFA 23
LIFE STAGE: 1SW, MSW salmon (wild and hatchery origin)
TARGET: 29.4 million eggs (4,400 MSW and 3,200 1SW fish)

Year	1986	1987	1988	1989	1990	1991	MIN	MAX	Mean
Harvest									
Native									
- 1SW	600	280	190	560	273	657	190[2]	657[2]	381[2]
- MSW	2400	1120	760	240	247	957	240[2]	2400[2]	953[2]
Recreational									
- 1SW	1692	1650	1755	2304	1610	1690	1151[1]	3580[1]	2260[1]
Counts									
- 1SW	7046	7972	9191	9587	7907	7575	4140[1]	17,314[1]	8939[1]
- MSW	4143	3430	2600	4291	3919	4226	2010[1]	10,451[1]	5283[1]
Returns									
- 1SW	8766	9237	10,180	10,861	8804	8751	4946[1]	19,275[1]	10,408[1]
- MSW	6925	4832	3537	4541	4125	5255	3537[1]	13,916[1]	7644[1]
Spawning									
- 1SW	5887	7020	7810	7533	6057	5721	5887[2]	7810[2]	6861[2]
- MSW	3519	2758	1704	3491	3207	3481	1704[2]	3519[2]	2934[2]
% of Target Met									
1SW	184	219	244	235	189	179	179[2]	244[2]	214[2]
MSW	80	63	39	79	73	79	39[2]	80[2]	67[2]

[1] For the period 1975-1990.
[2] For the period 1986-1990.

Catches: MSW salmon have not been retained in recreational fisheries since 1984; up to 1990, 1SW landings have ranged from 311 in 1972 to 3,580 in 1976. In 1991, the native food fisheries had the highest total landings since 1986; the absence of complete catch statistics seriously hampers the stock assessment and forecasting processes.

Data and methodology: Counts of fish obtained from the collection facility at Mactaquac Dam were augmented by estimates of down river removals. Smolts and juveniles of hatchery origin were counted at time of release.

State of the stock: Target MSW spawners have been met only three times in the last 14 years (1980, 1984, 1985); 1SW escapement contributed to only 8% of the target egg deposition; hatchery fish comprised 14.5% and 28.5% of 1SW and MSW returns in 1991.

Forecast: A relationship between egg depositions and wild 1SW returns indicates a return of 5,800 or 7,600 wild 1SW fish, depending on the forecast model. Another relationship between wild 1SW returns, their fork length and MSW returns suggests that the 6,300 1SW returns in 1991 will provide 3,900 or 4,200 wild MSW returns, depending on forecast model. The product of the numbers of hatchery releases and recent return rates suggest hatchery returns in 1992 of 2,000 1SW and 1,200 MSW salmon. Total 1SW returns could be 7,800 or 9,600 1SW fish; total MSW returns could be 5,100 or 5,400 MSW salmon. Target spawning requirements do not include 400 MSW broodstock required to seed Mactaquac hatchery.

Table 1: Overview of the status of Atlantic salmon in Atlantic Canada during 1991. Indices include recreational catches with estimates of catch and release, where available, for MSW salmon, commercial catches, and estimated returns. Estimated returns consist of counts of salmon from fishways or counting fences and index facilities (ex. Millbank trap, SFA 16). The data for 1991 are compared with 1990, and previous 5/6 year (1984/85-89/90). A "-" symbol implies a decrease by more than 10%, "+" indicates an increase by more than 10% while "0" refers to a change in either direction of less than 10%. No statistical significance is assigned to these changes.

Zones	Recreational catch				Estimated returns				Commercial catch			
	1SW		MSW		1SW		MSW		1SW		MSW	
	1990	84/85 -89/90	1990	84/85 -89/90	1990	84/85 -89/90	1990	84/85 -89/90	1990	84/85 -89/90	1990	84/85 -89/90
NEWFOUNDLAND												
SFA												
1	-	-	-	-					-	-	-	-
2	-	-	-	-					-	-	-	-
3	-	-							+	-	-	-
4	-	-			-	-	-	-	-	-	-	-
5	-	-			-	-	-	-	-	-	-	-
6	-	-							+	-	-	-
7	-	-							+	-	-	-
8	-	-							-	-	-	-
9	-	-			-	+	0	+	0	-	-	-
10	-	-			-	-	-	-	-	-	0	-
11	-	-			-	-	-	-	-		0	-
GULF 12	-	-	-	-								
13	-	-	-	-					0	-	-	-
14	-	-	-	-	+	-	-	+	0	-	+	-
15	-	-			-	-	-	-				
16	-	-			-	-	0	+				
17	NA	NA										
18	0	-	+	+								
SCOTIA-FUNDY												
19	-	-	-	-	-		-					
20	-	-	-	-	-	-	-	-				
21	-	-	-	-	-	-	-	-				
22	-	-	-	-								
23	-	-			-	-	+	0				
QUEBEC												
Q												
1	-	0	-	-								
2	-	+	+	+								
3	0	+	0	+								
5+6	0	+	-	0								
7	-	-	-	-					-	-	0	-
8	-	-	0	+					-	-	-	0
9	0	0	-	-					0	0	+	0
10	-	-	+	-								
11	-	-	-	-							+	-

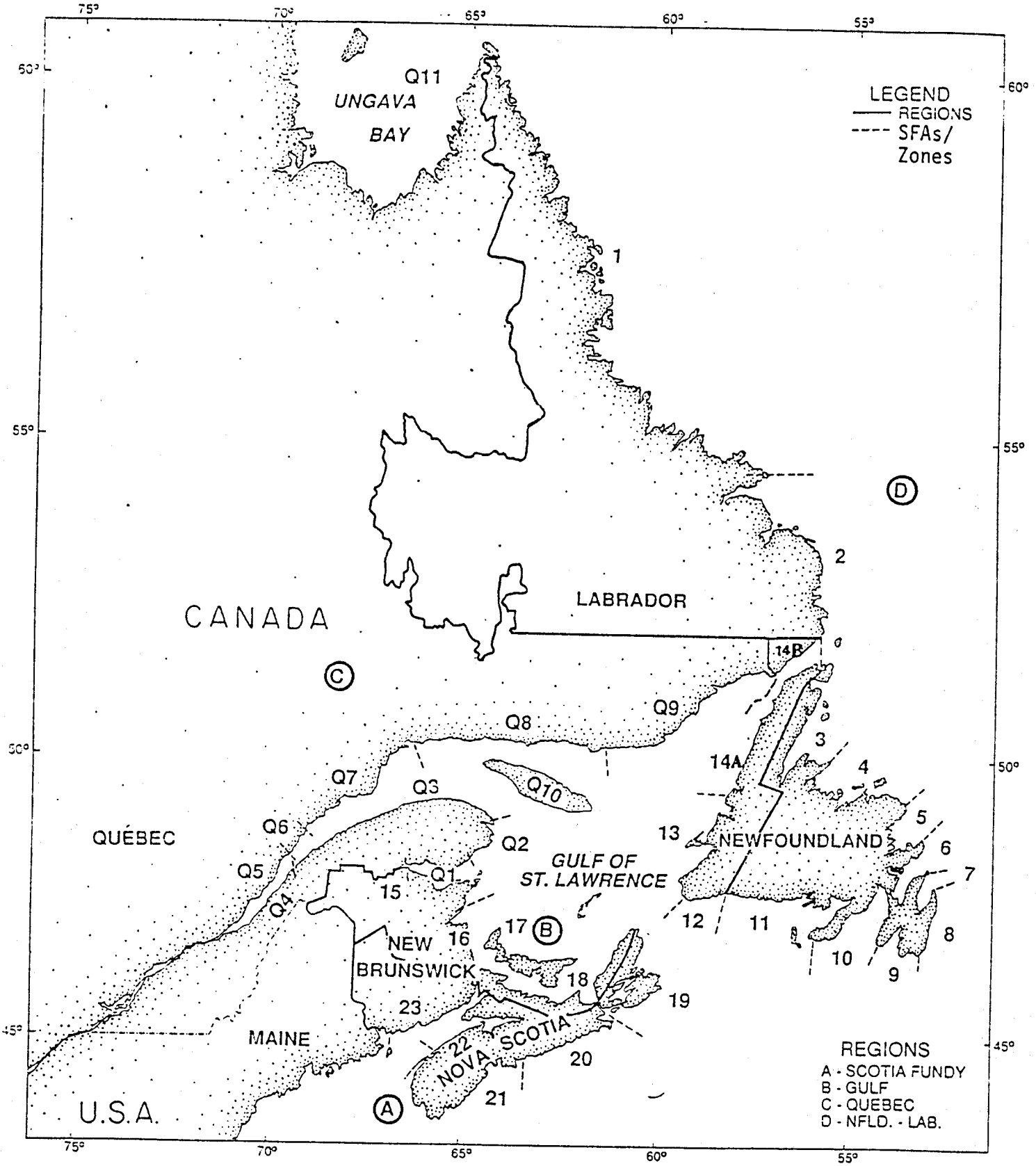


Fig. 1. Map of eastern Canada showing salmon fishing areas (SFAs).

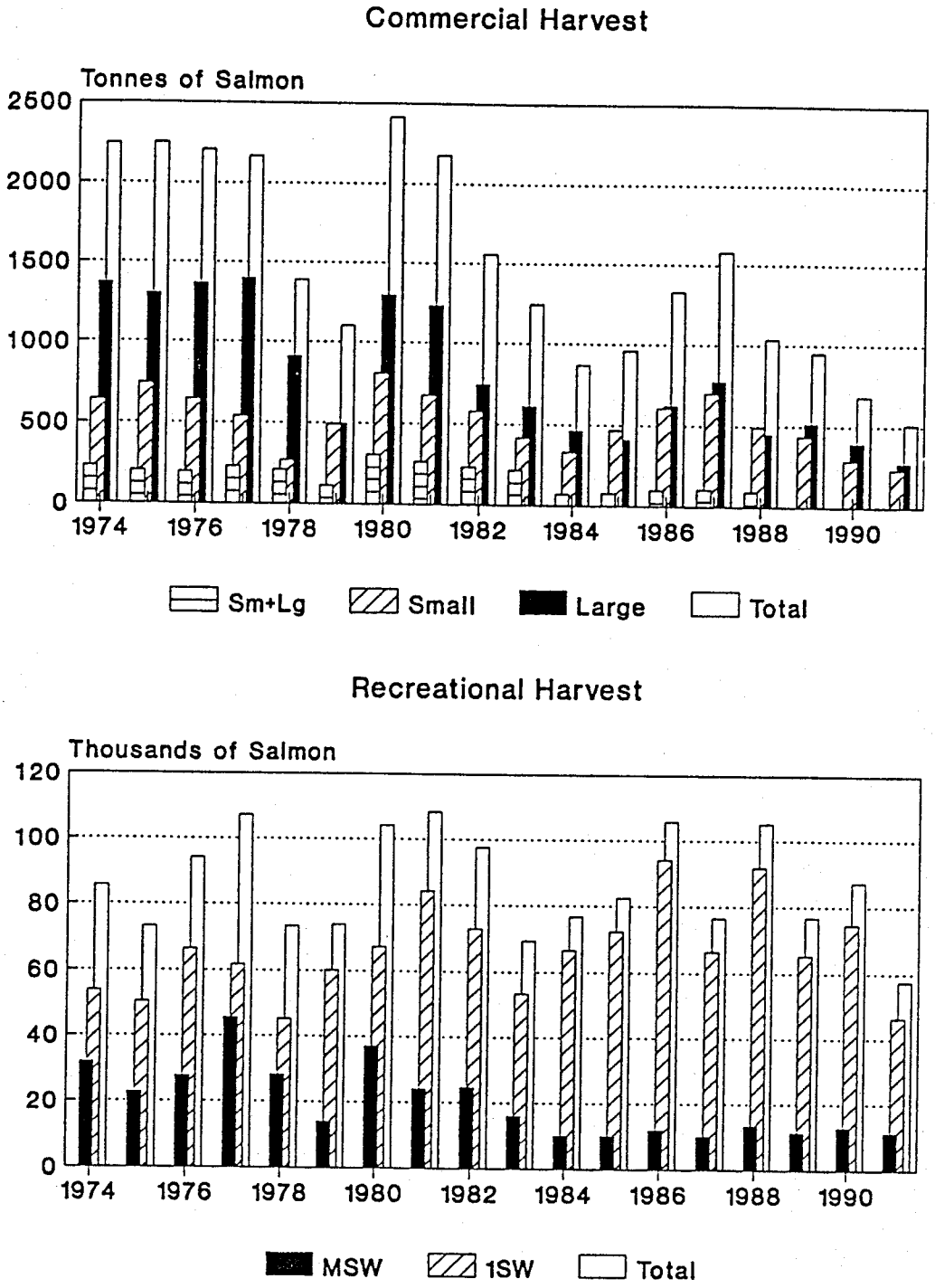


Figure 2. Canadian landings of Atlantic salmon, 1974-91.

ANNEX 11

NORTH AMERICAN COMMISSION

NAC(92)11

STATUS OF ATLANTIC SALMON STOCKS IN THE UNITED STATES OF AMERICA IN 1991

NAC(92)11

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1. INTRODUCTION

The Atlantic salmon resource in the United States of America consists of self-sustaining runs of salmon and specific salmon stocks in the process of restoration. There is no commercial fishery for Atlantic salmon in USA waters and use of the resource is limited to a managed recreational fishery only. Atlantic salmon stocks are assessed by the analysis of sport fishery catches, adult counts on monitored rivers, tag returns and scientific collections of juvenile fish. The material presented here is abstracted from the 1992 report of the US Atlantic Salmon Assessment Committee.

The United States is dedicated to the restoration of Atlantic salmon to its native habitat. The rivers of the northeastern states once produced large salmon runs estimated in many cases to have numbered in the tens of thousands each year. Prime examples are the river systems under restoration, the Connecticut, Merrimack and Penobscot rivers, which may have produced runs in excess of 100,000, 30,000 and 80,000 salmon respectively. The industrialization of the 1800s made spawning habitat inaccessible and water quality less than tolerable for salmon in these rivers. Yet in recent years, under great expense, tremendous strides have been made to reverse these conditions and return salmon to their historical habitat.

Restoration has involved a tremendous investment in fish passage at dams, improvement of the water quality of salmon rivers, and the building of an extensive system of hatcheries to reintroduce the fish where previously extirpated. The installation of state-of-the-art fish passage and fish guidance systems is a continuing process of making salmon spawning habitat available to adult fish and provide safe passage for smolts on their way to the sea. Improvements in water quality, by an array of legislation, has made habitat hospitable to all life stages of salmon including the delicate fry and parr. The hatchery system for Atlantic salmon involves numerous facilities that keep salmon broodstock and raise juvenile salmon for stocking.

2. THE SPORT FISHERY

The documented sport fishery catch of Atlantic salmon in the State of Maine during 1991 was considerably lower than recorded for 1990 (Table 1). The decrease in catch has been attributed to smaller runs of salmon. As in previous years, the number of salmon caught and released was substantially higher than the number retained. In 1991, 239 salmon were reported released out of a total angling catch of 477.

The exploitation rate in Maine rivers varied from 0% to about 25% with an overall statewide exploitation rate of 13%. This rate is similar to what has been observed for recent years. The exploitation rate in the Penobscot River, which supports the largest Atlantic salmon sport fishery in the USA, has gone through changes related to abundance of salmon and changes in the management of the resource (Figure 1). With the increase in stocking and large runs of the late 1970s, the exploitation rate in

the Penobscot increased from levels of approximately 6% to higher exploitation of approximately 21%. With regulations designed to reduce catch in the 1980's exploitation has decreased to approximately 10% in recent years. Beginning in 1992, the statewide limit on fish kept will be reduced from five to one salmon.

Historical trends in total sport catch for the Penobscot and other Maine rivers are represented in Figure 2. Sport catch is dominated by the catch of 2SW salmon. Total catch is still dominated by contributions from the Penobscot River fishery.

Rivers with self-sustaining native stocks continue to show a decline in their sport fishery catches. Catches of 2SW wild origin salmon (identified by scale reading) decreased in these rivers during 1991 and are still well below the long term trend (Figure 3).

3. STOCKING OF JUVENILE SALMON

Over 6 million juvenile salmon were released into USA rivers in 1991 (Table 2 and Figure 4). This represents the fourth consecutive year that total hatchery output for salmon restoration in the USA has exceeded 5 million fish. Maine (primarily the Penobscot), the Merrimack and the Connecticut rivers continue to be the largest restoration efforts accounting for over 97% of the stocked fish. Fry stocking has been increased on the Penobscot, Merrimack and Connecticut rivers reflecting the increased emphasis being put on this introduction strategy in the major restoration programs.

Juvenile salmon continue to be tagged with Carlin and coded wire tags (Figure 5). Carlin tags were applied to 50,000 smolts released into the Penobscot River in 1990. Coded wire tags were applied to smolts released into the Penobscot (197,000), the Merrimack (123,000) and the Connecticut (145,000) rivers. A total of 467,000 coded wire tags were released in 1991.

Carlin tags have been used on salmon stocks from the Connecticut River and various rivers in the State of Maine. Large tagging experiments with Maine origin smolts began in 1966. After early research on tagging methods and adult releases, most tagging studies have been conducted with smolts in the Penobscot River. Tagging levels have been between approximately 25,000 and 100,000 tags annually throughout the time series with exception of 1978 when Carlin tagging was suspended for one year. Carlin tags have also been applied to Connecticut River smolts, first during the early 1970s, and later during the period 1984 to 1988.

Coded wire tags were first used on USA stocks (Connecticut River) to evaluate broodstock performance and were not intended for distant water recovery. After 1984, tags were applied to Connecticut and Merrimack river salmon with target recoveries in Greenland and Canadian commercial salmon fisheries. Penobscot origin salmon were first tagged with coded wire tags in 1986.

4. RUN SIZE AND ESCAPEMENT

Run size to Maine rivers is estimated by the ICES Working Group Model which integrates run estimates for rivers with and without trapping facilities (Figure 6). The estimated run of 1SW salmon has increased since the early 1970s which probably

reflects increased stocking activities in the State of Maine. Two distinct peaks of abundance have occurred in 1SW returns, one in 1980-81 and the other since 1986. This trend is not reflected in the estimated run of 2SW salmon which has shown a declining trend since the early 1980s. The run of 2SW salmon continues to dominate total returns to Maine rivers. The estimated run of 3SW salmon shows a steady pattern of decline and appears to be unaffected by increased stocking levels.

Run estimates for the Merrimack and Connecticut rivers are based on trap counts since no fishing is allowed in these rivers (Figure 7). Total run sizes in 1991 were 332 and 203 in the Merrimack and Connecticut rivers, respectively, which represents an increase of 34% in the Merrimack and a 23% decrease in the Connecticut over 1990 levels. These restoration rivers have typically produced runs of less than 500 salmon each year. Increases in 1991 Merrimack run are attributed in part to increased returns from fry stocked origin salmon.

The target run size for restoration of Atlantic salmon in the northeastern United States is in excess of 50,000 salmon each year. This target is based primarily on expected stock size for the major restoration river systems. Expectations are that the Connecticut River will produce in the range of 12,000 to 21,000 salmon each year, the Merrimack 5,000 to 7,000 salmon and the Penobscot River 10,000 to 15,000 salmon. These estimates are for both sexes and before exploitation by in-river recreational fisheries. Many smaller rivers make up the remainder.

5. ATLANTIC SALMON RESEARCH PROGRAM HIGHLIGHTS, 1991

The research program for Atlantic salmon in the USA is extensive in the areas of husbandry, ecology, and management of the species. Research is conducted by the National Marine Fisheries Service, US Fish and Wildlife Service, US Forestry Service, National Parks Service, all New England States, Indian tribes, private groups and many Universities. The cooperative efforts of state, federal, private and academic researchers are broadly organized by the three major restoration programs on the Connecticut, Merrimack and Penobscot rivers. Research is conducted on topics unique to individual rivers and of general interest to the international salmon research community.

Connecticut River

A fish bypass facility for migrating juvenile salmon was completed at the Holyoke power canal on the Connecticut River. This passage facility, which consists of a floating louver system angled across the power canal, will transport fish to a location in the tailrace below the generating units. The system will be tested with tagged hatchery smolts during the spring of 1992. Utility companies are working to install downstream fish passage systems at five main stem dams by 1994.

Hatcheries on the Connecticut River are using improved techniques to package and transport salmon sperm to fertilize eggs at different hatchery and thereby promote maximum mixing of gametes. The effectiveness of the program is being monitored by tracking breeding rates and genetic inbreeding indices, both of which have improved since the program was implemented.

The US Forest Service completed the second year of a study to enumerate stream reared smolts emigrating from two White River tributaries. The study focused on the performance of two auger-type traps that have been modified to local conditions. The maximum trapping efficiency observed in the study was 5.2% at temperatures in the river ranging from 7 to 11°C.

Merrimack River

Smolt recapture studies on the Merrimack River show that the onset of migration appears to occur when temperature in the river reaches 10°C. Migration routes and transit times are being studied under a number of different flow conditions to assess the efficiency of passage facilities on the river.

Research on the relationship between stocking densities and smolt production continues. Predictive models of smolt production are being developed that are linked to environmental and habitat variables. The goal of this work is to develop scientific guidelines for the most advantageous use of juvenile fish during stocking activities. The guidelines are expected to be drainage specific, but the general principals used should be applicable region wide.

Maine

As a consequence of the continued decline of salmon populations of rivers in Northeastern Maine, the US Fish and Wildlife Service initiated an analysis of the genetic make-up of each of these populations to determine whether they warrant special protection as distinct populations. These rivers will be stocked with fry from river specific broodstock to help rehabilitate their salmon populations.

Smolt release pools, facilities designed to allow hatchery smolts to migrate on their own volition, were used to study migration rates, timing, and paths on the Penobscot River. Smolts were enumerated as they exited the pools with a video counting system that allowed precise measurement of migration timing and behaviour. Some smolts used in the study were also radio tagged and monitored with both fixed and mobile antennae systems. The researchers notice that the smolts migrated in synchrony with each other with almost all fish leaving on the same day. Fish that were tracked as they migrated downstream gave an indication of potential migration rates to be expected of other stocked and wild smolts.

Table 1. Sport fishery catches of Atlantic salmon in Maine rivers, 1991. Landings by age are fish kept in the fishery and include 1, 2, and 3 sea-winter salmon, additionally, previous spawners (PS) are enumerated. Total caught includes released fish.

	Landings (fish kept)				Total Caught	
River	1SW	2SW	3SW	PS	1991	1990
St. Croix	2	0	0	0	3	6
Dennys	1	6	0	0	9	34
E. Machias	2	3	0	0	5	83
Machias	2	0	0	0	2	2
Pleasant*					0	0
Narraguagus	1	20	0	1	28	61
Union	0	0	0	0	0	0
Penobscot	40	148	1	3	422	1091
Dúcktrap	0	0	0	0	0	2
Sheepscot	0	4	0	0	4	9
Kennebec	0	4	0	0	4	106
Saco	0	0	0	0	0	19
Other(marine)	0	0	0	0	0	1
Total	48	185	1	4	477	1414

* Catch and release.

Table 2. Summary of Atlantic salmon stocked (000's) in USA rivers.

	Maine			Merrimack			Connecticut			Total		
Year	Fry	Parr	Smolt	Fry	Parr	Smolt	Fry	Parr	Smolt	Fry	Parr	Smolt
1962	0	151	70	0	0	0	0	0	0	0	151	70
1963	0	11	101	0	0	0	0	0	0	0	11	101
1964	0	49	20	0	0	0	0	0	0	0	49	20
1965	0	47	220	0	0	0	0	0	0	0	47	220
1966	0	118	326	0	0	0	0	0	0	0	118	326
1967	0	13	204	0	0	0	0	0	5	0	13	209
1968	0	25	247	0	0	0	50	0	5	50	25	252
1969	0	25	85	0	0	0	0	0	17	0	25	103
1970	0	25	50	0	0	0	50	0	50	50	25	100
1971	0	16	89	0	0	0	75	0	28	75	16	117
1972	129	0	117	0	0	0	0	0	23	129	0	140
1973	0	0	143	0	0	0	15	0	55	15	0	199
1974	0	44	137	0	0	0	9	0	79	9	44	216
1975	0	25	169	36	0	0	13	12	79	49	37	248
1976	0	186	303	63	93	2	30	0	64	93	278	369
1977	0	0	374	72	1	31	50	0	114	122	1	520
1978	0	116	303	106	0	47	50	0	131	156	116	481
1979	28	72	371	78	0	40	54	0	183	159	72	594
1980	0	0	682	126	0	32	286	12	52	412	12	766
1981	252	71	257	57	0	100	168	188	79	477	258	436
1982	349	375	395	50	182	67	292	44	209	691	601	671
1983	20	78	538	8	25	109	226	399	98	254	501	745
1984	134	57	795	519	29	68	625	431	312	1278	517	1175
1985	472	168	772	148	6	174	422	241	255	1042	414	1200
1986	576	124	780	524	32	104	162	456	291	1262	612	1175
1987	969	309	720	1078	112	141	1101	729	216	3148	1149	1077
1988	858	967	938	1718	129	91	1310	147	395	3886	1243	1424
1989	580	713	605	1033	149	58	1243	358	218	2856	1219	881
1990	761	458	660	952	35	117	1271	367	476	2984	860	1253
1991	740	469	821	1475	0	123	1735	340	350	3950	809	1294

Figure 1. Sport fishery exploitation on the Penobscot River.

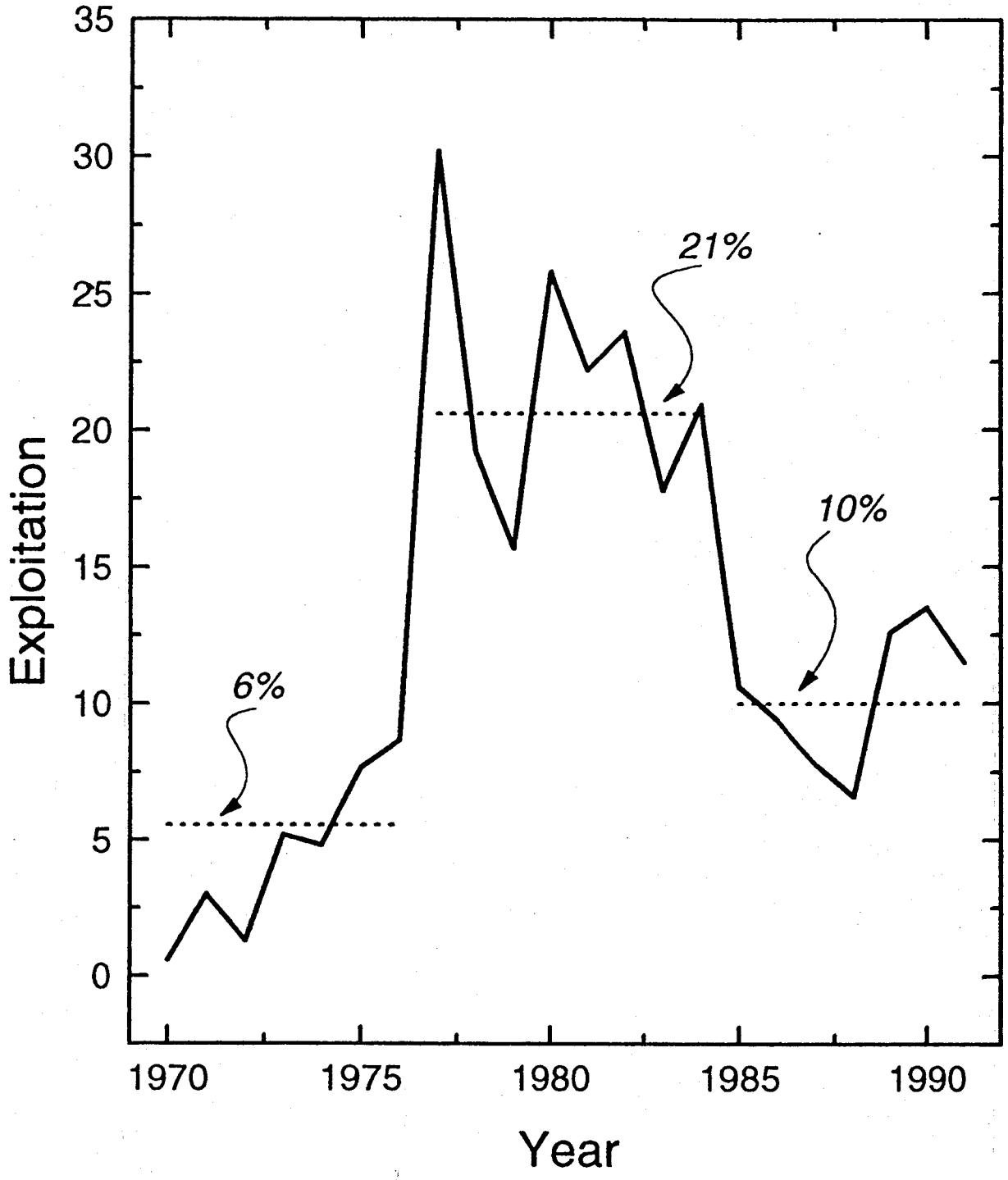


Figure 2. Sport catch of salmon of all ages to the Penobscot and Maine rivers (includes released fish).

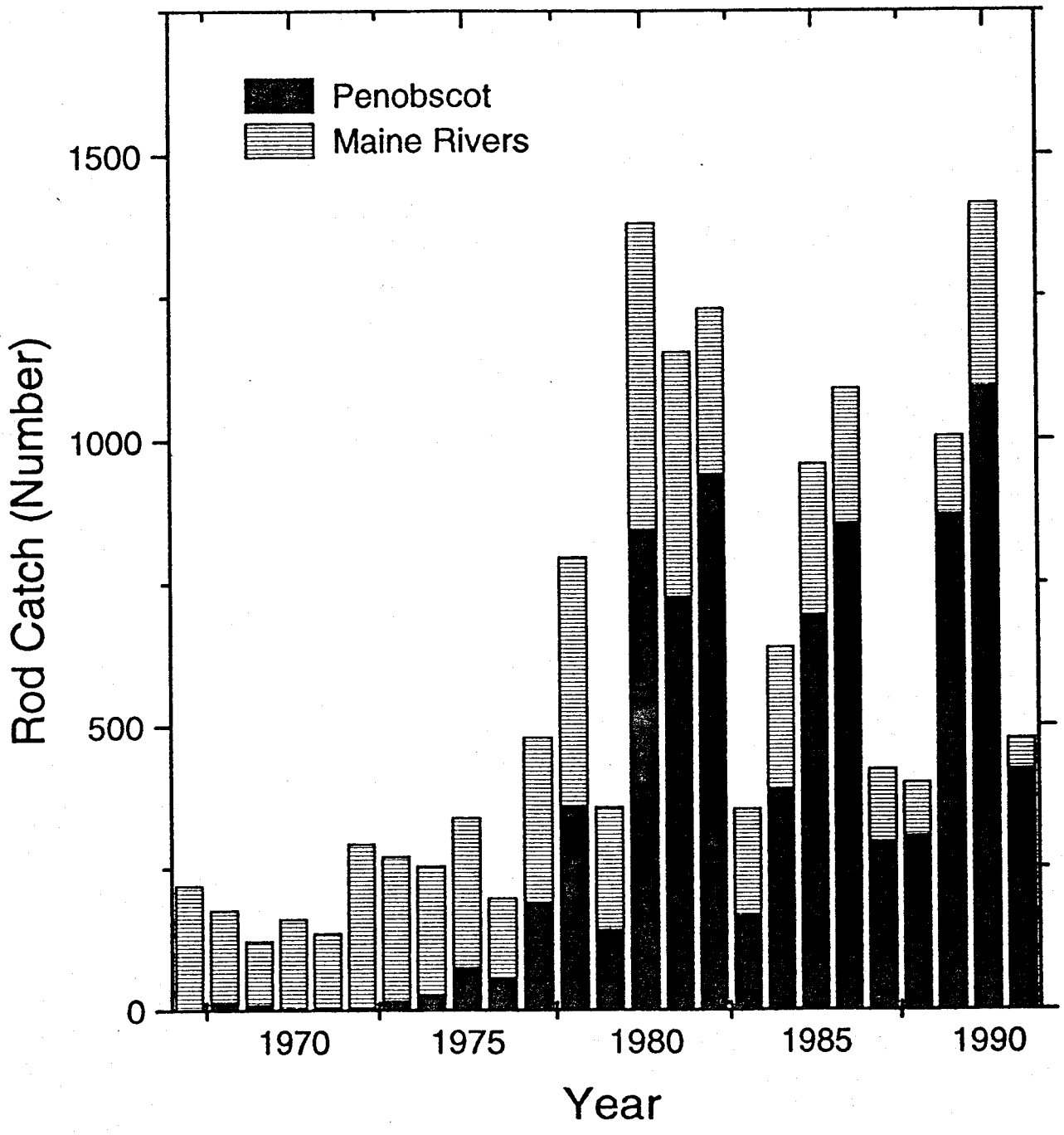


Figure 3. Sport catch (fish kept) of wild origin 2SW salmon in Maine rivers still supporting self-sustaining runs. Line indicates moving average.

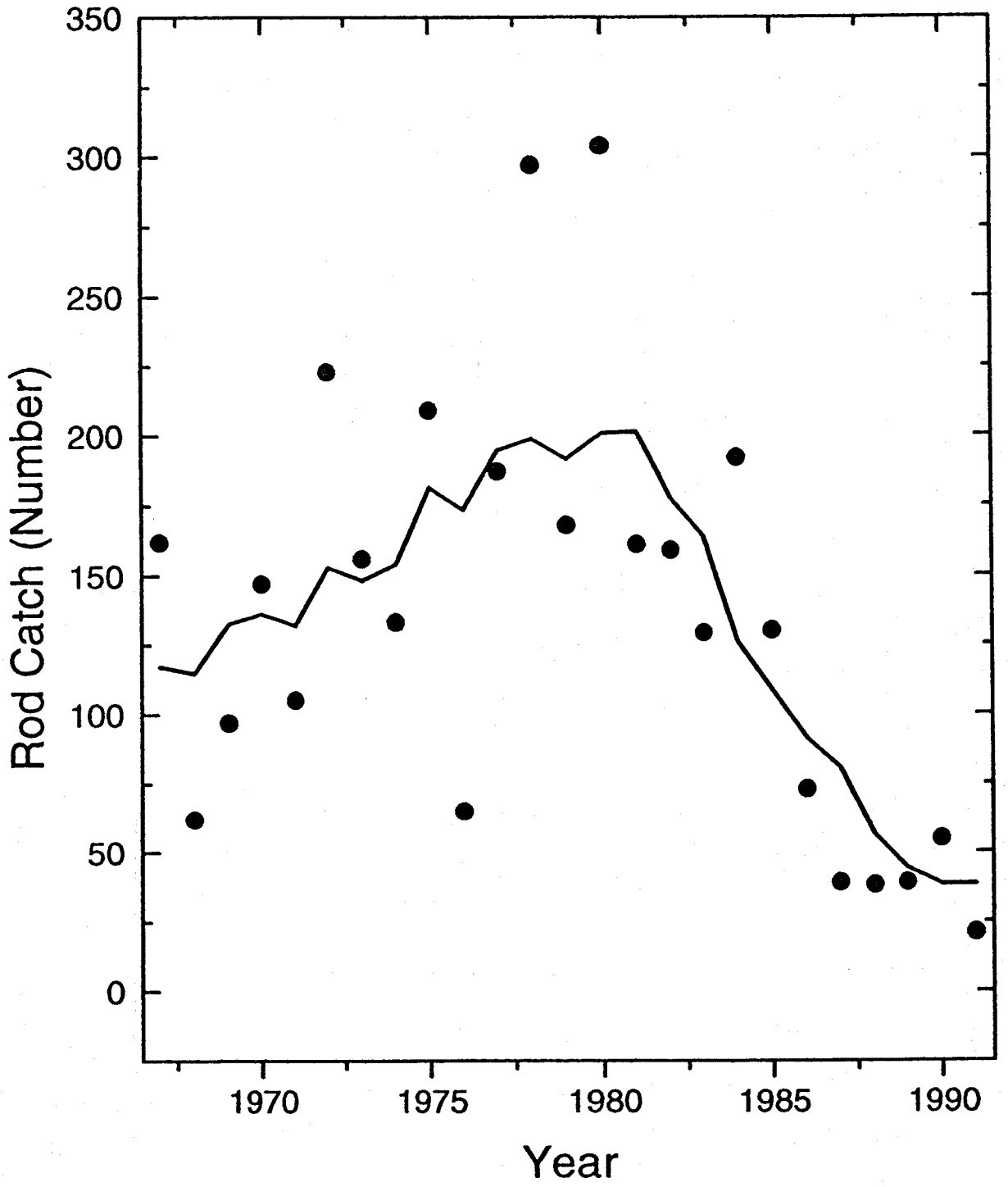


Figure 4. Releases of juvenile Atlantic salmon in USA rivers (000's of fish).

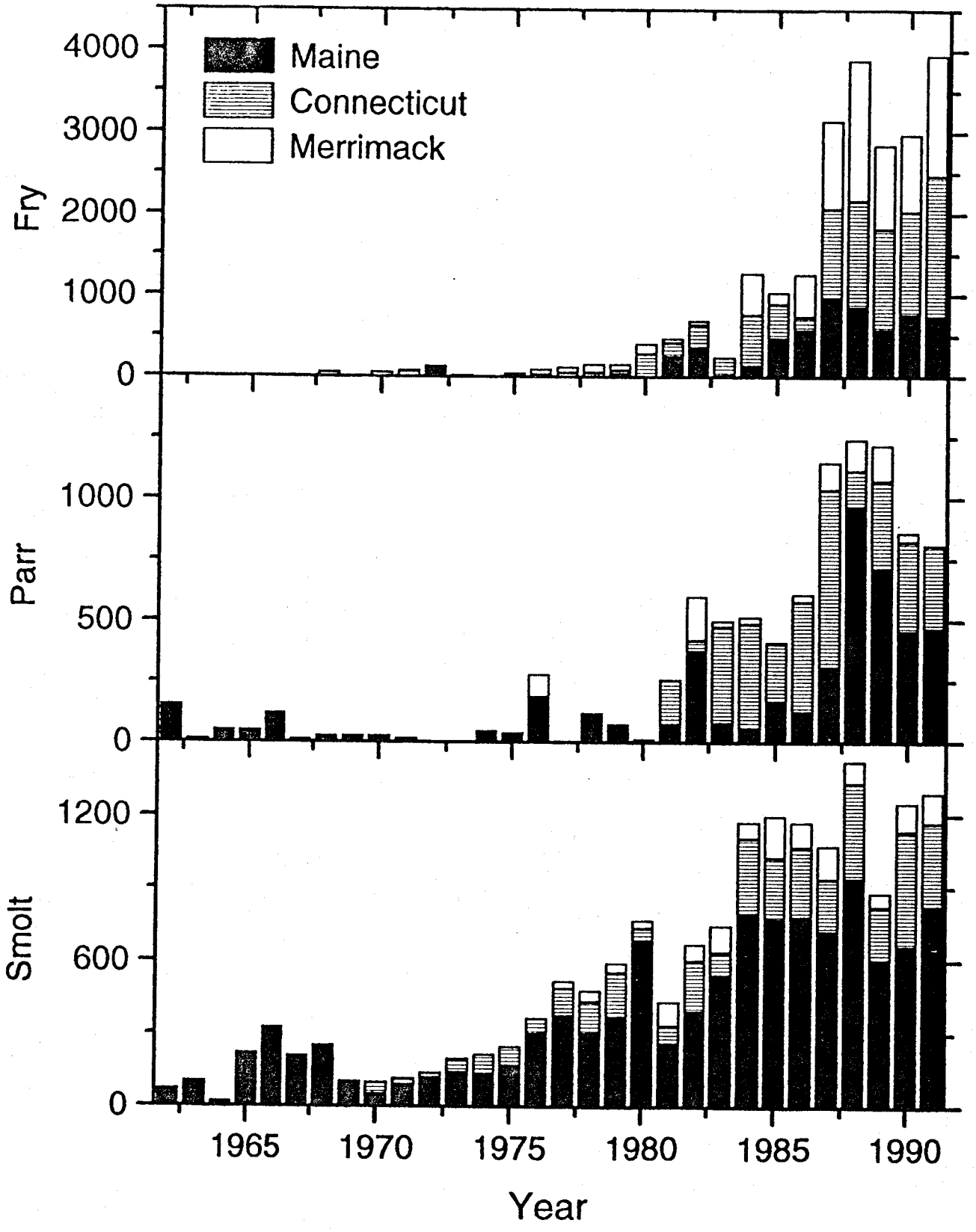


Figure 5. Tag releases in USA rivers (000's of fish).

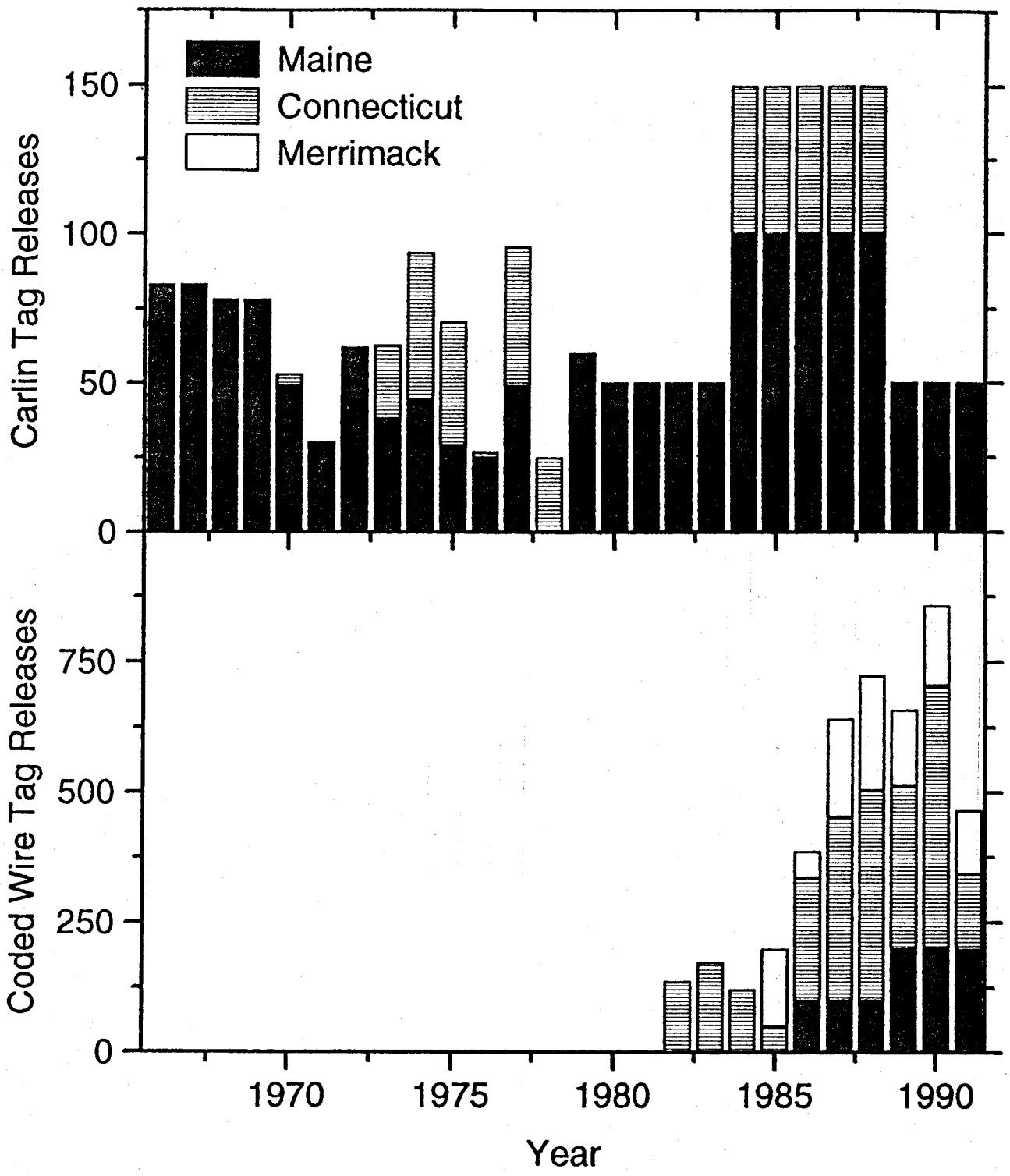


Figure 6. Estimated run size (ICES Working Group model) of 1, 2, and 3 SW salmon to Maine rivers. Line indicates averaged trend.

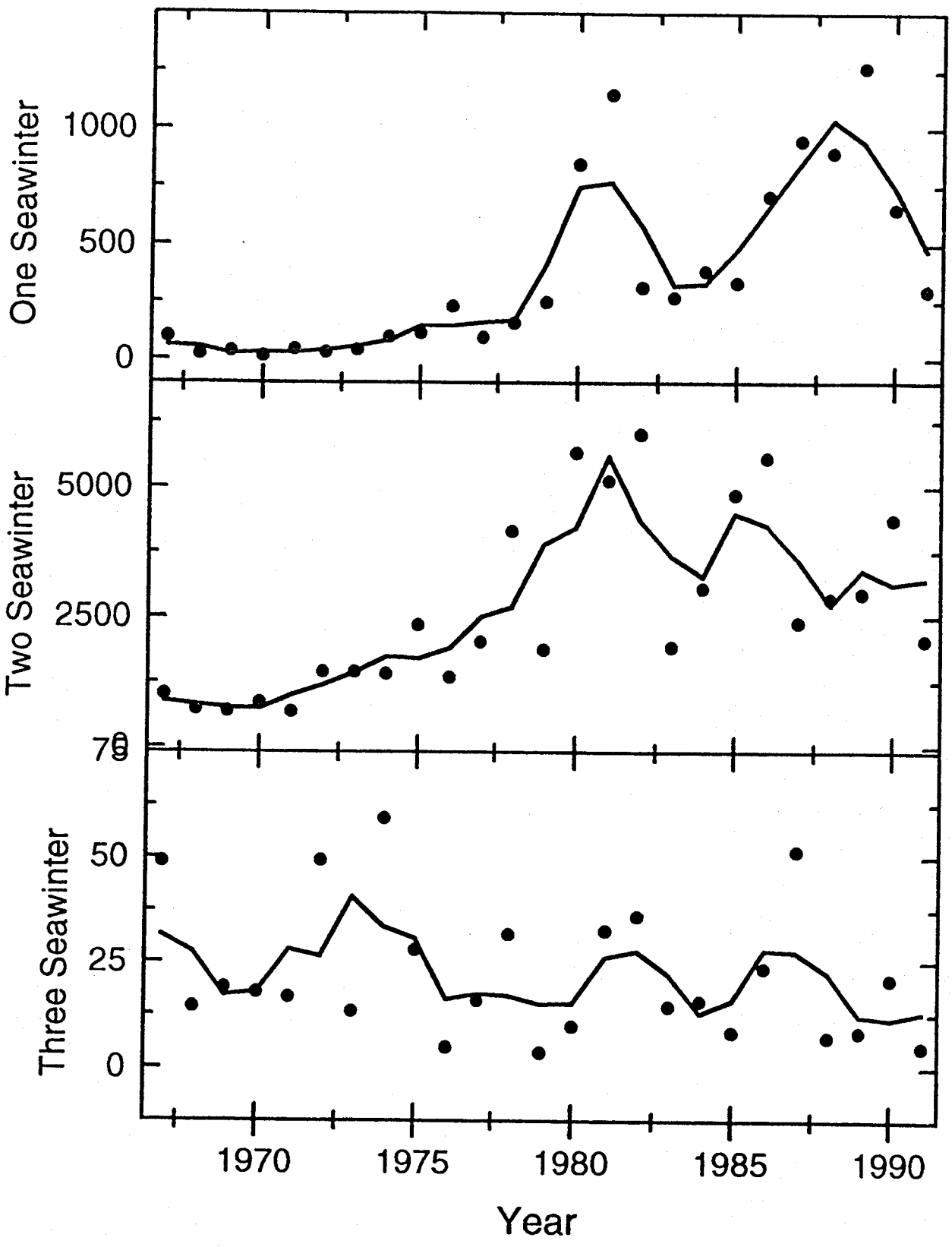
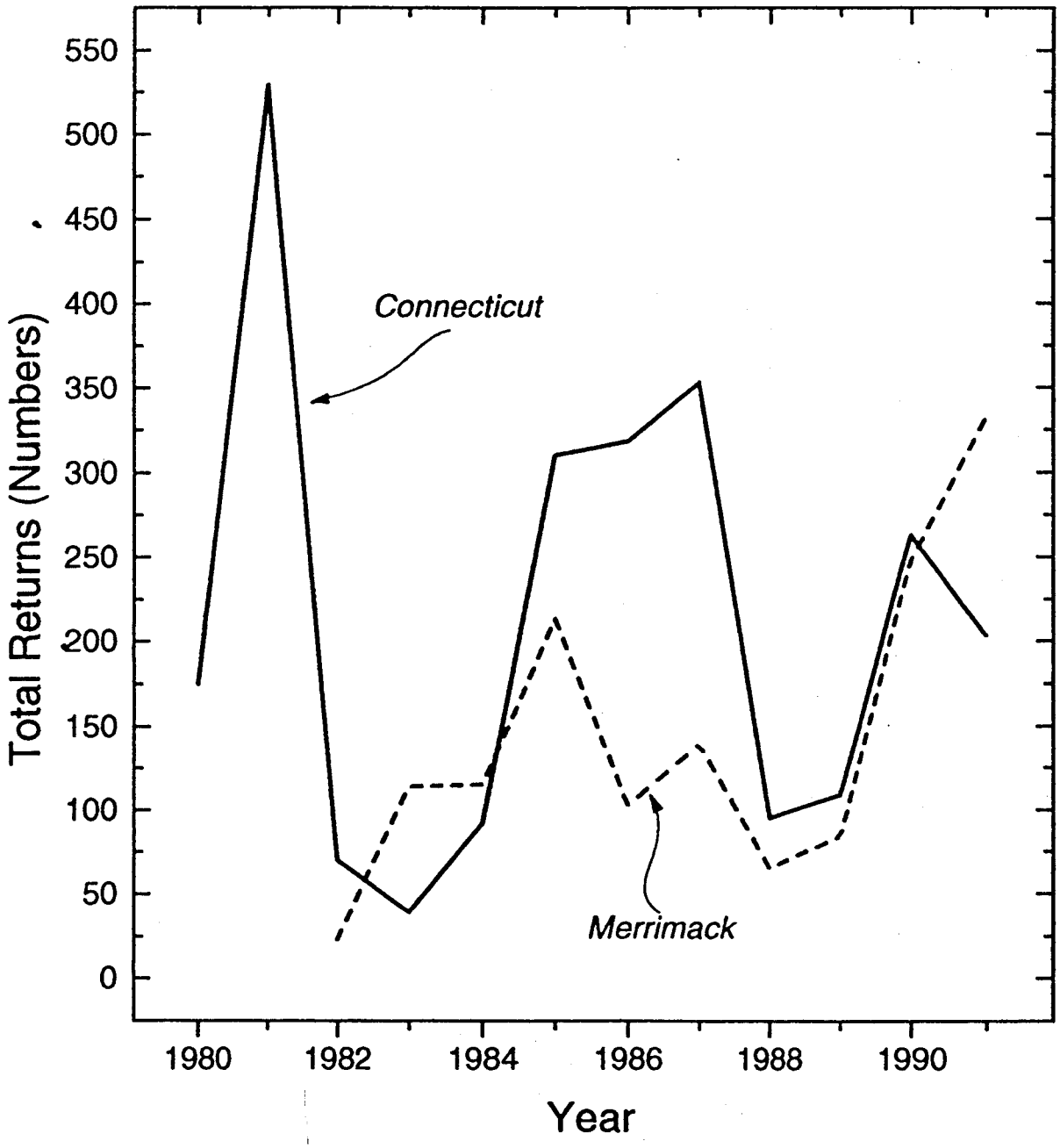


Figure 7. Total returns of salmon of all ages to the Connecticut and Merrimack rivers.



ANNEX 12

NORTH AMERICAN COMMISSION

NAC(92)13

CANADA AND NEWFOUNDLAND OFFER $40 MILLION TO RETIRE COMMERCIAL SALMON FISHING LICENCES

NAC(92)13

CANADA AND NEWFOUNDLAND OFFER $40 MILLION TO RETIRE COMMERCIAL SALMON FISHING LICENCES

CANADA **NEWFOUNDLAND**

NR-HQ-92-18E **For Immediate Release**
March 6, 1992

ST. JOHN's -- John C Crosbie, Minister of Fisheries and Oceans and Minister for the Atlantic Canada Opportunities Agency, and Newfoundland Fisheries Minister, Walter Carter, today announced a jointly-funded offer of cash payments to commercial salmon fishermen who voluntarily retire licences issued in their name. The offer is the cornerstone of a major program to conserve and enhance the stock of Atlantic salmon.

Payments to commercial licensees will range from $8,000 to $50,000, depending on the level of their salmon landings in the best year out of the past three. Payments will be made after they agree to the terms of the offer and turn in their salmon fishing gear.

Total cost of the retirement program is expected to be about $40 million, to be shared 70-30 by the federal government and the province.

Recreational salmon fishermen in all Atlantic provinces also will be observing new fisheries management initiatives in support of conservation and habitat renewal. In accord with the judicial Sparrow decision, allowances will be made for the right of aboriginal peoples to fish for food.

"Salmon is a significant share of many fishermen's livelihood," said Mr Crosbie. "We have made this retirement program as generous as possible so that those who accept it will have funds to invest in alternative economic activity".

"If the Atlantic salmon is to recover to the abundance of a generation ago, there is no alternative but to sharply curtail commercial salmon fishing," said Mr Crosbie. "This is a voluntary program. However, I hope that the great majority of licence holders in the province will choose to accept our offer."

Mr Carter said that recent restrictions upon the commercial sector, such as reduced seasons and quotas, have not rebuilt the salmon resource and, therefore, fishermen would have to face further restrictions in the future.

"In this context," he said, "this offer allows fishermen the option of accepting up to eight times the value of their best year's landings since 1989 and, given the current state of the resource, may be acceptable to many salmon licence holders."

Commercial salmon fishing was discontinued in Prince Edward Island, Nova Scotia and New Brunswick nearly 10 years ago. Newfoundland and Labrador is the only Atlantic province where it is permitted. There are just under 3,000 licensees still active in the province.

Despite prior licence retirements and other conservation measures, preliminary figures for 1991 indicate the fourth consecutive year of a declining commercial catch in Newfoundland and Labrador, with landings of just 433 tonnes. This is 39 per cent below the lowest catch in all of the 1980s (798 tonnes in 1984).

Coincident with the retirement offer, a minimum five-year closure of the commercial salmon fishery for the Island portion of the Province will take effect.

For Labrador, with its high dependence on salmon and limited prospects for fisheries diversification, there will not be a fishing moratorium. In order to increase stocks, those who choose to retain licences will not be free to take up the catch foregone by those who accept retirement.

The allowable salmon catch in Labrador will decrease in the same proportion as licences are retired. Continuing licensees will remain subject to restrictions on their catch, up to and including prohibition, for reasons of conservation. Fewer than one in seven of the commercial licences outstanding in the province is held in Labrador, an estimated 418 out of 2,979 licences in 1991.

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BACKGROUNDER
FICHE D'INFORMATION

B-HQ-92-10E

NEWFOUNDLAND AND LABRADOR ATLANTIC SALMON INITIATIVES

For many years federal and provincial governments and user groups have been concerned about finding ways and means to conserve and enhance the dwindling Atlantic salmon resource.

This matchless food and game fish is highly prized. It was once so numerous in North Atlantic waters that its abundance was taken for granted. In 1967 commercial landings of 2,853 tonnes were better than four times higher than the current catch. The recreational catch of about 80,000 Atlantic salmon that year has not come near to being equalled in the quarter century since. Historically, Atlantic salmon was a valuable food source for natives and an important trading commodity for European settlers in the New World.

But in recent years pressure from overfishing, pollution and obstruction of freshwater habitat have seriously depleted salmon stocks.

Enhancement measures have included programs to restore and improve habitat, preserve and strengthen the stocks and limit the catches of the various parties exploiting the resource.

Bag limits, length of season and the size of salmon that can be taken for recreational fishing have been steadily constrained over the past decade in response to scientific assessments of the wild stock and measured observation of the actual catch.

Nevertheless the salmon catch continues to decrease.

There are many constraints on the resource, including habitat degradation and marine conditions. Some are not of our making or beyond our control.

The licence retirement offer put forward jointly by Newfoundland and Labrador and Canada is an essential first step to support a region-wide program of habitat renewal, enhancement activities, international efforts to curb foreign interception of stocks, more stringent sportfishing regulations in rivers where further control is required and overall fisheries management and enforcement.

The goal is to restore the salmon stocks of Newfoundland and Labrador, the lower north shore of Quebec, Nova Scotia, Prince Edward Island and New Brunswick.

Cooperation agreements between the provinces and Ottawa are under negotiation. They will involve a broad coalition of groups concerned with resource conservation, sportfishermen, fishery-related industries and different agencies and levels of government.

All commercial salmon fishing was banned in New Brunswick and Quebec's Gaspé peninsula in 1972. Re-opened in NB on a limited basis in 1981, when there was evidence of stock

recovery, the commercial salmon fishery was closed again in 1983 in all three Maritime provinces.

In Quebec, where the provincial government has the primary role in managing the fishery, commercial salmon licences are being retired in a graduated phase-out.

In Newfoundland commercial fishing has been permitted to continue because salmon has traditionally provided a part of fishermen's overall income in that province, most particularly in Labrador.

But commercial harvesting reduces spawning escapements with a negative impact on reproduction and the quantity of stocks. The Newfoundland gillnet fishery affects stocks in all Atlantic provinces by catching salmon off the coast before they can return to spawn in their home rivers on the mainland.

The Department of Fisheries and Oceans, which is responsible for the prudent management of Canada's fishery resource for the benefit of all Canadians, has adopted a renewal program for the salmon fishery with three main thrusts:

A. Conservation Priority: The retirement of commercial salmon licences is one conservation measure. Others will be implemented in the course of a fisheries development program that will help to sustain economic development and increase employment in Atlantic Canada by supporting enhancement initiatives and business ventures in areas such as infrastructure improvement. The program will promote angling by tourists and residents within guidelines of the conservation goals.

DFO and ACOA (Atlantic Canada Opportunities Agency) are negotiating cooperation agreements with each of the Atlantic provinces for the development of fisheries.

In addition, the fast-growing aquaculture industry has contributed to the conservation and renewal of Atlantic salmon resources. New and improved technologies for rearing salmon have been developed and applied in enhancement programs. Research into the culture of Atlantic salmon has improved understanding of the biology of the species, leading to improved management. Aquaculture also provides a useful employment alternative in some areas.

B. Management of Aboriginal Food Fishery: The licence retirement offer and all associated catch reductions will be consistent with DFO and ACOA policies, undertakings and agreements with native groups.

DFO will continue to manage the native food fishery in a manner consistent with the Supreme Court of Canada's Sparrow decision, and will continue discussions with aboriginal peoples with respect to fishing rights and opportunities.

C. Commercial Retirement: In Newfoundland and Labrador the commercial salmon catch is declining in size and economic importance. Preliminary indications are that the value of landings in 1991 will be less than a third of what they were in 1980.

The governments of both Newfoundland and Labrador and Canada are jointly proposing a voluntary commercial licence retirement program. Commercial licence holders will be

encouraged to turn in their gear and retire licences issued in their names in return for ex-gratia payments between $8,000 and $50,000, depending on the level of the retiree's salmon landings in the best year out of the past three.

Coincident with the retirement offer, a minimum five-year closure of the insular Newfoundland salmon fishery will take effect.

For Labrador, with its high dependence on salmon and limited prospects for fisheries diversification, there will not be a fishing moratorium. A voluntary licence retirement program will be offered under essentially the same terms as for insular Newfoundland. Those who choose to retain licences will not be free to take up the catch foregone by those who accept retirement.

The total allowable salmon catch in Labrador will diminish in the same proportion as licences are retired. Continuing licensees still will be subject to restrictions on their catch for reasons of conservation. Fewer than one in seven of the commercial licences outstanding in the province is held in Labrador, an estimated 418 out of 2,979 licences in 1991.

THE RETIREMENT OFFER

01. Fishermen with commercial salmon licences, valid in 1991, will be eligible to retire their licences, with ex gratia compensation, while this offer remains in force.

02. The commercial salmon fishery in insular Newfoundland (excludes SFA Zones 2 and 14(B)) will be closed for at least five years. Continued commercial fishing will be permitted for fishermen in Zones 2 and 14(B) who choose to retain their salmon licences.

03. The offer will be in force from the date of announcement until October 31, 1992. Labrador fishermen, whose claims have not been settled by the opening of the commercial fishing season in early June 1992, will not have their claims processed until after October 31, 1992. Fishermen in SFA zone 1 will be considered separately following further consultations with native groups and commercial licence holders.

04. Licences will be retired permanently.

05. As a condition of compensation, licence retirees will turn in salmon nets at a time and place to be indicated by DFO.

06. Retirees will be offered either:

    (i) As a minimum, an ex gratia payment of $8,000, if they choose not to, or do not have documents acceptable to DFO establishing the value of their landings;
    (ii) An ex gratia payment equal to eight times the value of the retiree's salmon landings in the best year out of the past three years, up to a maximum of $50,000 per retiree. This must be documented by purchase slips or other verifiable receipts.

07. Payments will be made at the time the licence is retired, the gear turned in and fishermen have accepted compensation offered.

08. Those who choose to retain and renew commercial salmon licences will not be compensated for any fishery closure. If it is decided to re-open the fishery at a later date, subject to policies in effect at that time, those who retained and renewed their licences would be able to fish again. There is no guarantee this fishery will ever re-open, however.

09. Those who voluntarily retire their licences may be considered for re-entry if the fishery re-opens and new licences are issued, subject to policies in effect at that time.

Appeals

An Advisory Committee will be set up by DFO and the Newfoundland and Labrador government to review disputes over fishermen's eligibility or validity of licensing documents. A Fishermen Food and Allied Workers (FFAW) Union representative will be invited to participate on the Committee in an ex-officio capacity. Resolution of disputed cases will be subject to approval by representatives from both governments.

Disputes which cannot be resolved to the appellant's satisfaction may be referred to an independent advisor who will make recommendations to the federal and provincial fisheries ministers. Ministers' decisions will be final and binding on all parties.

In addition to Canada's contribution under this program and agreement, DFO also will pay the salary of a Fishermen's Advisor, under contract with FFAW, for the duration of the program.

Management of the commercial fishery

Fishermen in insular Newfoundland who retain and renew commercial salmon licences will be prohibited from salmon fishing for at least five years. At that time salmon stock recovery will be reviewed. If stocks have recovered sufficiently to permit the resumption of gillnetting, re-opening of the commercial fishery may be considered, subject to policies in place at that time.

Labrador fishermen (SFA Zones 2 and 14(B)) choosing to retain and renew commercial salmon licences will fish under reduced quotas. The quota reduction will be in the same proportion as the number of licences retired. DFO will undertake a survey of Labrador fishermen in early 1992 in order to estimate the percentage who may retire their licences. Estimated quotas will be made public, based on this percentage. DFO will further adjust quotas at the time the season opens, if the actual number of licences retired differs significantly from the estimate.

Management of the native food fishery

The licence retirement offer and all quota reductions in Zones 2 and 14(B) will be consistent with DFO and ACOA policies, undertakings and agreements with native groups. While fishermen in SFA Zone 1 are currently excluded from this offer, they will be considered following further consultations with native groups.

DFO will continue to manage the native food fishery in a manner consistent with the Sparrow decision, and will continue discussions with aboriginal peoples with respect to fishing rights and opportunities.

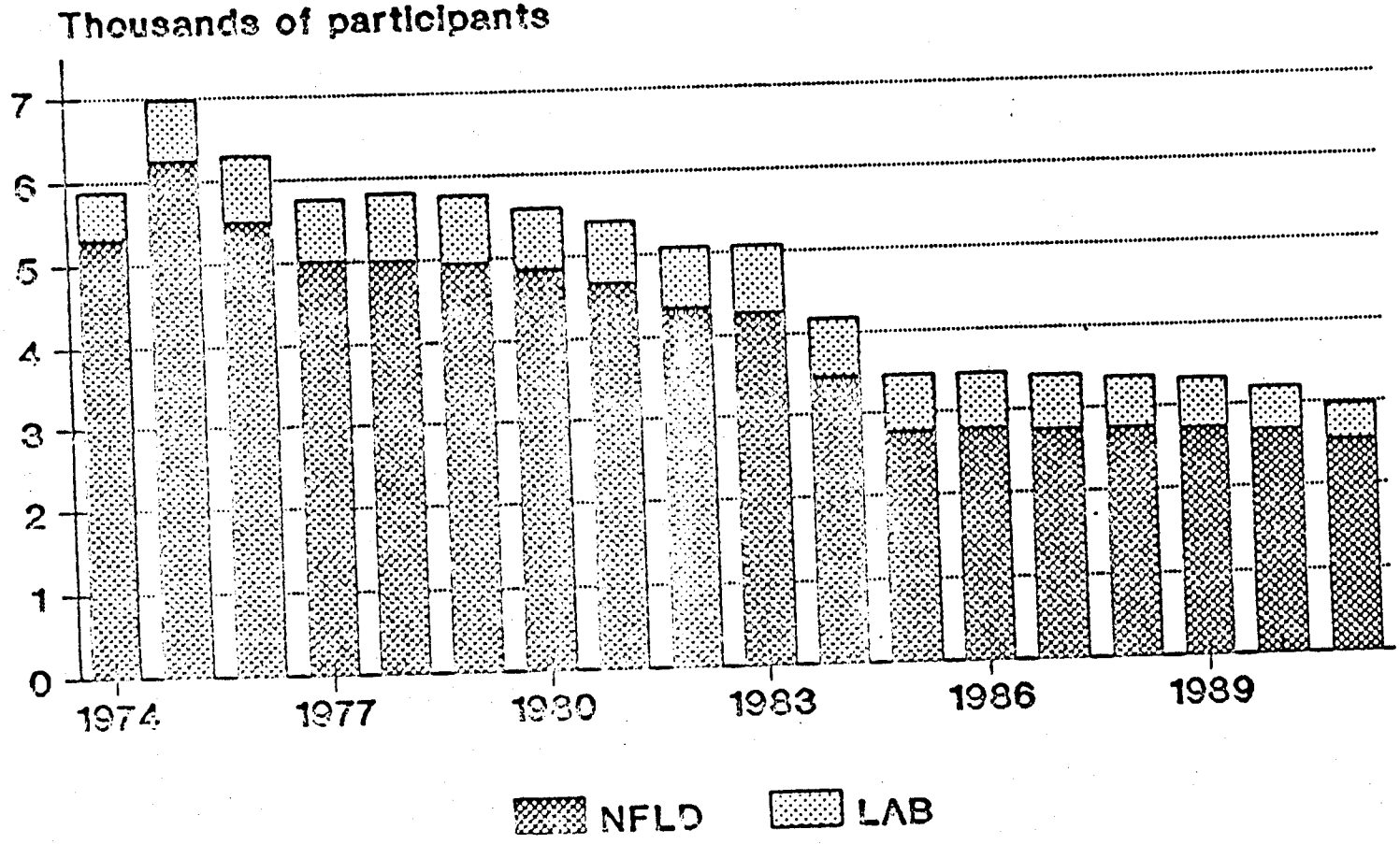
Management of the recreational fishery

Recreational fishermen will be required to make a reduction in effort consistent with the overall conservation and sustainable development objectives of the Recreational Fisheries Development Cooperation Agreement. DFO, in consultation with the Province of Newfoundland and Labrador, will consider specific measures on a river by river basis. These include imposing river-specific quotas; changes in the opening and closing dates for recreational fishing seasons; bag limits; "grilse-only" retention; "catch-and-release" fishing; or combinations of these measures. DFO will consult with the sportfishing sector and the Province of Newfoundland and Labrador on these measures for 1992.

MARCH 1992

Salmon fishery statistical charts and tables attached.

NEWFOUNDLAND SALMON FISHERY
COMMERCIAL LICENCE HOLDERS
1974 - 1991



Source: DFO, 1992.

As of January 31, 1992

NEWFOUNDLAND AND LABRADOR
COMMERCIAL LICENCE HOLDERS
1974-1991

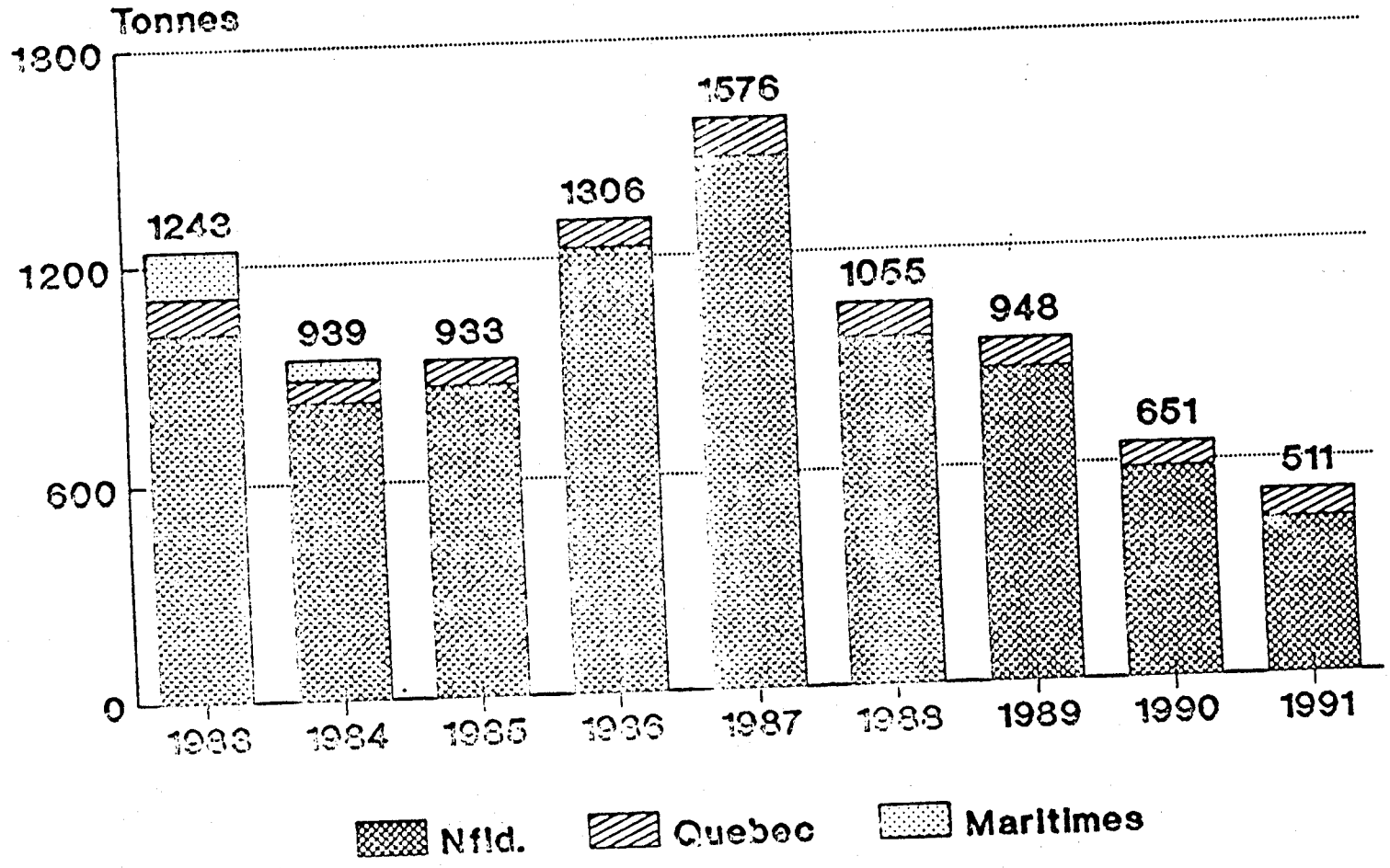
YEAR	NEWFOUNDLAND	LABRADOR	TOTAL
1974	5,312	568	5,880
1975	6,252	729	6,981
1976	5,506	781	6,287
1977	5,006	750	5,756
1978	4,997	818	5,815
1979	4,985	810	5,768
1980	4,853	739	5,592
1981	4,671	731	5,402
1982	4,353	716	5,069
1983	4,262	801	5,063
1984	3,449	727	4,176
1985	2,779	674	3,453
1986	2,800	647	3,447
1987	2,770	637	3,407
1988	2,770	594	3,364
1989	2,740	589	3,329
1990	2,691	508	3,199
1991	2,561	418	2,979

SOURCE: DFO, 1992

NOTES:

(1) The number of commercial licence holders in insular Newfoundland has been on a downward trend throughout this period. This has been due, to some extent, to four deliberate efforts by DFO to retire or cancel licences, as well as a policy eliminating licence transfers by retiring fishermen. Close to 1,500 licences were "removed", out of the roughly 4,000 that left the fishery between 1975 and 1991.

COMMERCIAL CATCHES OF ATLANTIC SALMON
BY AREA, 1983-1991



Source: DFO, 1992.

As of January 31, 1992

CANADIAN COMMERCIAL CATCHES BY AREA, 1983-1991

YEAR	NFLD & LAB	QUEBEC	MARITIMES	TOTAL
1983	1,017	95	131	1,243
1984	821	62	56	939
1985	863	70	0	933
1986	1,230	76	0	1,306
1987	1,473	103	0	1,576
1988	963	92	0	1,055
1989	868	80	0	948
1990	586	65	0	651
1991	433	78	0	511

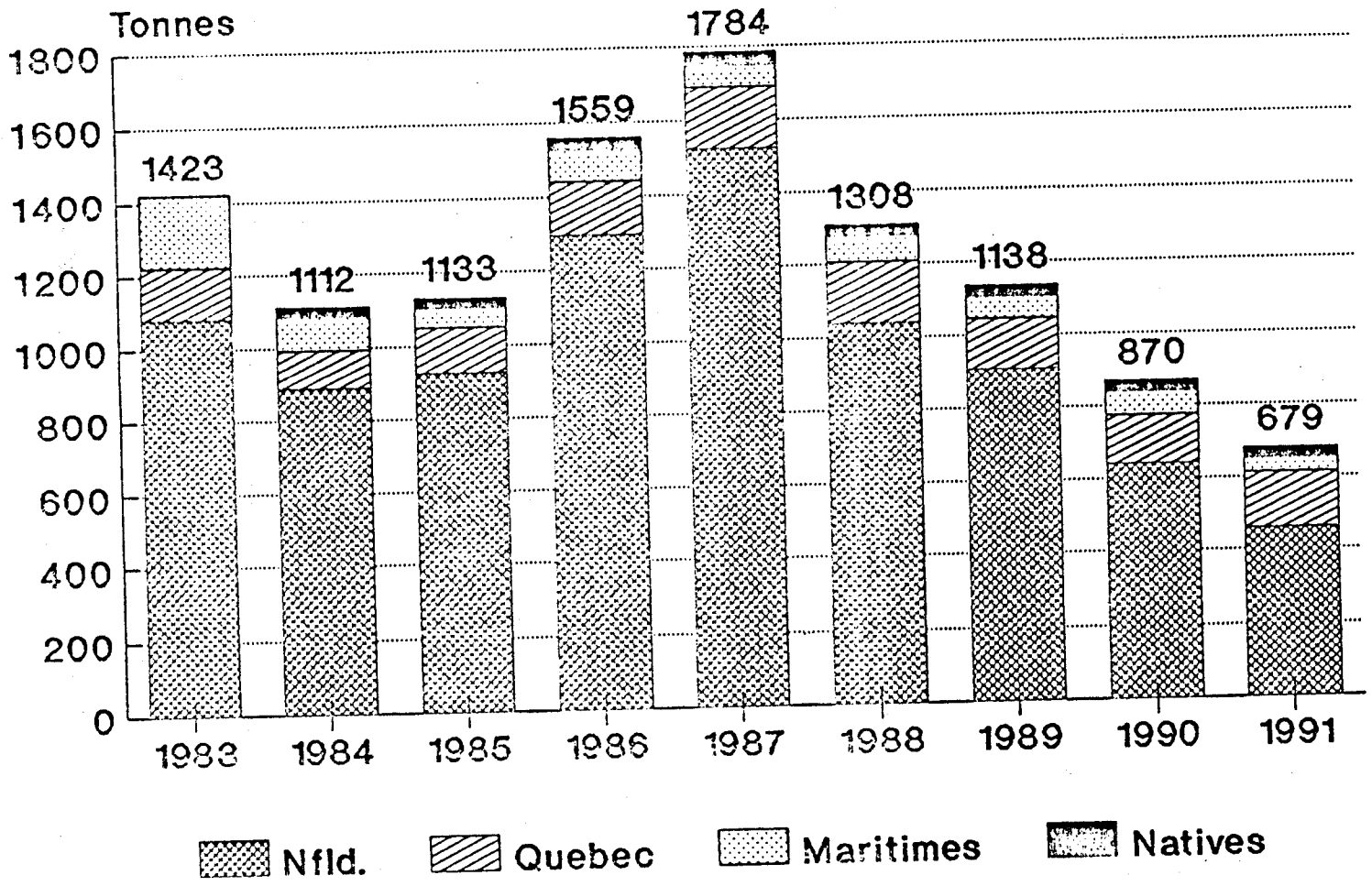
SOURCE: DFO, 1992.

NOTES:

(1) Newfoundland and Labrador fishermen have accounted for more than 90% of commercial wild salmon landings, each year, over this period.

(2) Landings in Newfoundland-Labrador and Quebec rose by 79% and 66% respectively, between 1984 and 1987. 1987 was two full seasons after the 1985 closure of the maritime commercial fishery.

CANADIAN ATLANTIC SALMON CATCHES
ALL SECTORS, BY AREA, 1983-1991



Source: DFO, 1992.

As of January 31, 1992

CANADIAN ATLANTIC SALMON CATCHES BY AREA FOR ALL SECTORS, 1983-1991

YEAR	NFLD & LAB	QUEBEC	MARITIMES	NATIVES	TOTAL
1983	1,080	145	198	NA	1,423
1984	888	104	93	27	1,112
1985	926	125	53	29	1,133
1986	1,295	147	86	31	1,559
1987	1,524	163	57	40	1,784
1988	1,040	169	69	32	1,310
1989	908	139	61	30	1,138
1990	642	134	62	32	870
1991	462	150	38	29	679

SOURCE: DFO, 1992.

NOTES:

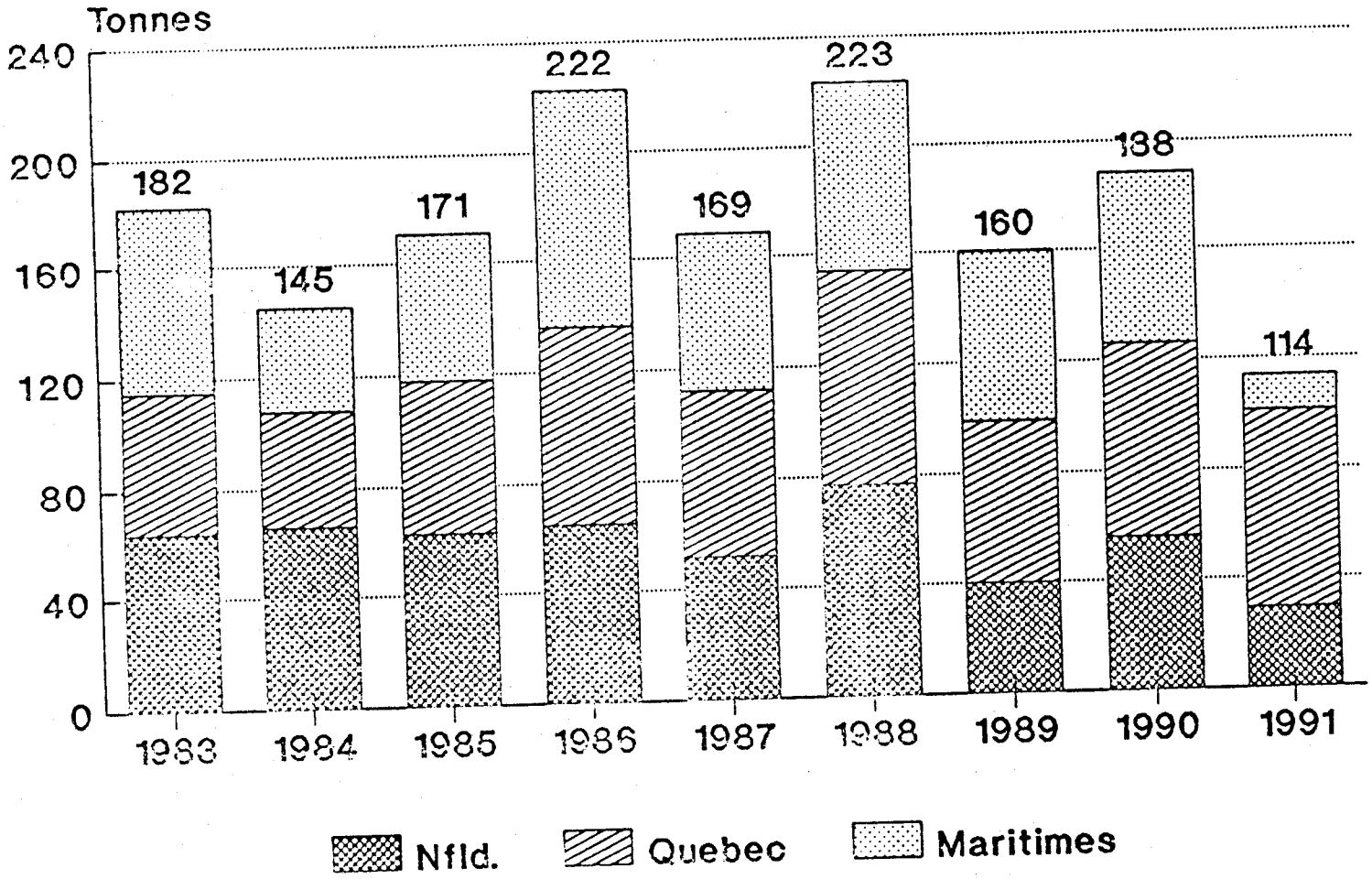
(1) Closure of commercial salmon fisheries in New Brunswick, Nova Scotia and P.E.I. from 1985 forward reduced the maritimes share of salmon to recreational take only.

(2) Newfoundland and Labrador's share of the total catch by all sectors remained above 75% throughout the period.

(3) 1990 was the first year DFO set quota for the Newfoundland and Labrador commercial fishery (all but SFA Zone 1, which remained on an allowance).

(4) The decline in total catch, 1991 over 1987, was more than 60%.

RECREATIONAL CATCHES OF ATLANTIC SALMON
BY AREA, 1983-1991



Source: DFO, 1992.

As of January 31, 1992

CANADIAN RECREATIONAL CATCH OF ATLANTIC SALMON BY AREA, 1983-1991
(Tonnes)

YEAR	NFLD & LAB	QUEBEC	MARITIMES	TOTAL
1983	64	51	67	182
1984	66	42	37	145
1985	63	55	53	171
1986	65	71	86	222
1987	52	60	57	169
1988	77	77	69	223
1989	40	59	61	160
1990	56	70	62	198
1991	29	72	37	138

SOURCE: DFO, 1992.

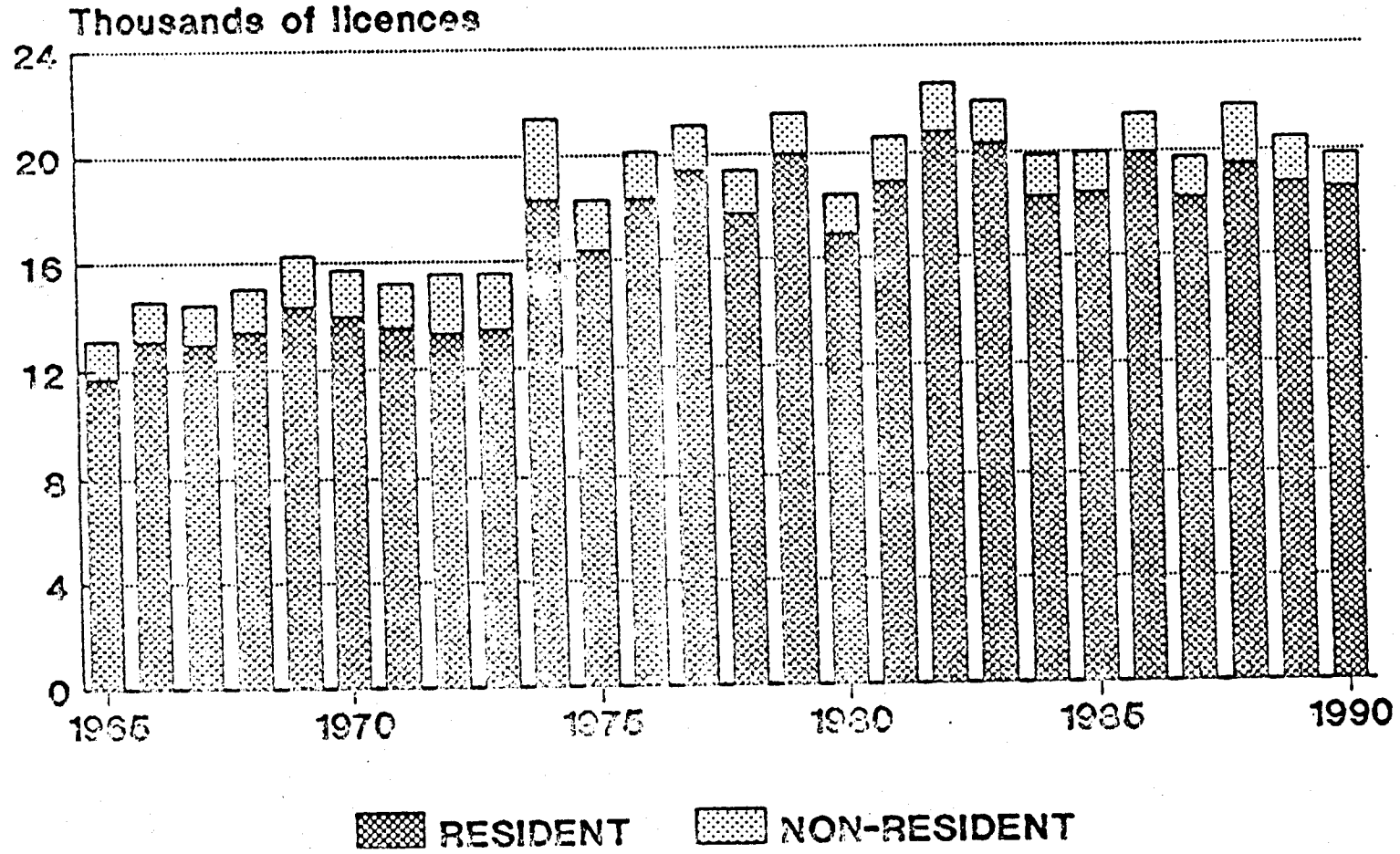
NOTES:

(1) Recreational catches do not show the same pattern of decline in tonnage as commercial. However, the proportion of grilse to MSW salmon has risen, in catch composition, from about one-third to close to one-half.

(2) The following salmon angling regulations applied in 1991:

- daily bag limit of 2 fish in NB, NS, and Nfld-Lab, 1 in PEI;
- possession limit of 1 fish in PEI, 4 in Nfld-Lab, 6 in NB, NS;
- seasonal bag limit of 10 fish in NB, NS and Nfld-Lab (reduced from 15 to 10 in 1991 in Nfld-Lab);
- PEI seasonal limit of 5 fish;
- grilse only salmon retention (less than 63cm) in NB, NS, PEI and insular Newfoundland;
- generally, season opening and closing from June to October, with individual river closures possible, where quotas have been exceeded;
- gear restricted to unweighed artificial flies in most areas.

NEWFOUNDLAND-LABRADOR SALMON ANGLERS
LICENCE SALES 1965-1990



Source: DFO, 1992.

As of January 31, 1992

NEWFOUNDLAND AND LABRADOR SALMON ANGLER LICENCE SALES
1965 - 1990

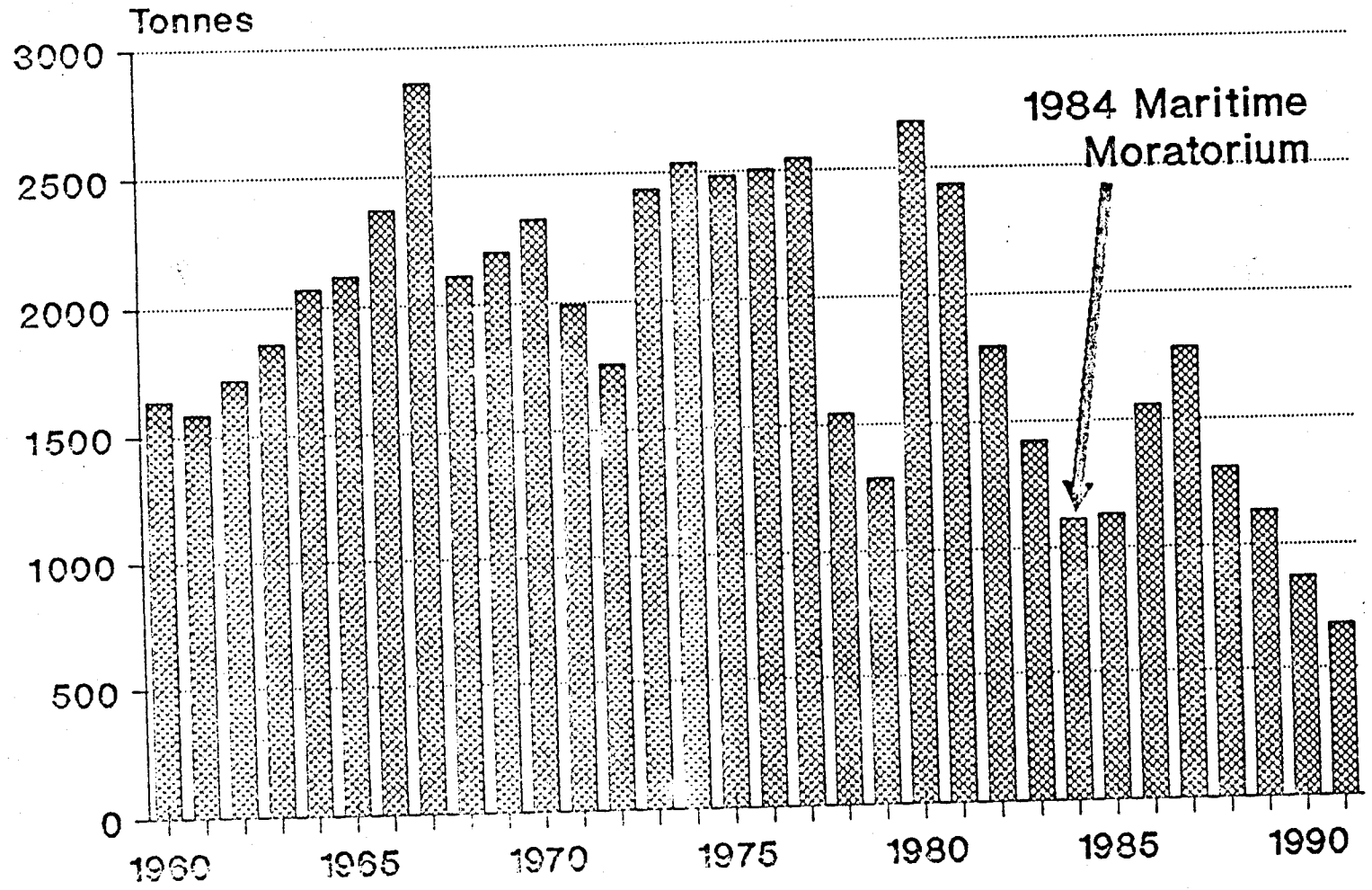
YEAR	RESIDENT	NON-RES	T0TAL
1965	11,717	1,426	13,143
1966	13,128	1,475	14,603
1967	12,962	1,492	14,454
1968	13,428	1,614	15,042
1969	14,391	1,900	16,291
1970	13,996	1,710	15,706
1971	13,588	1,642	15,200
1972	13,352	2,213	15,565
1973	13,497	2,049	15,546
1974	18,289	3,083	21,372
1975	16,406	1,862	18,268
1976	18,297	1,806	20,103
1977	19,364	1,697	21,061
1978	17,750	1,599	19,349
1979	19,986	1,495	21,481
1980	16,934	1,438	18,372
1981	18,839	1,715	20,554
1982	20,797	1,757	22,554
1983	20,304	1,555	21,859
1984	18,245	1,621	19,866
1985	18,394	1,542	19,936
1986	19,924	1,450	21,374
1987	18,173	1,548	19,721
1988	19,475	2,186	21,661
1989	18,726	1,701	20,427
1990	18,515	1,305	19,820

SOURCE: DFO, 1992.

NOTES:

(1) Non-resident participation, measured by sales of salmon angling licences, shows no increasing or decreasing trend. Licence sales to residents, however, do show an upward trend, over this period.

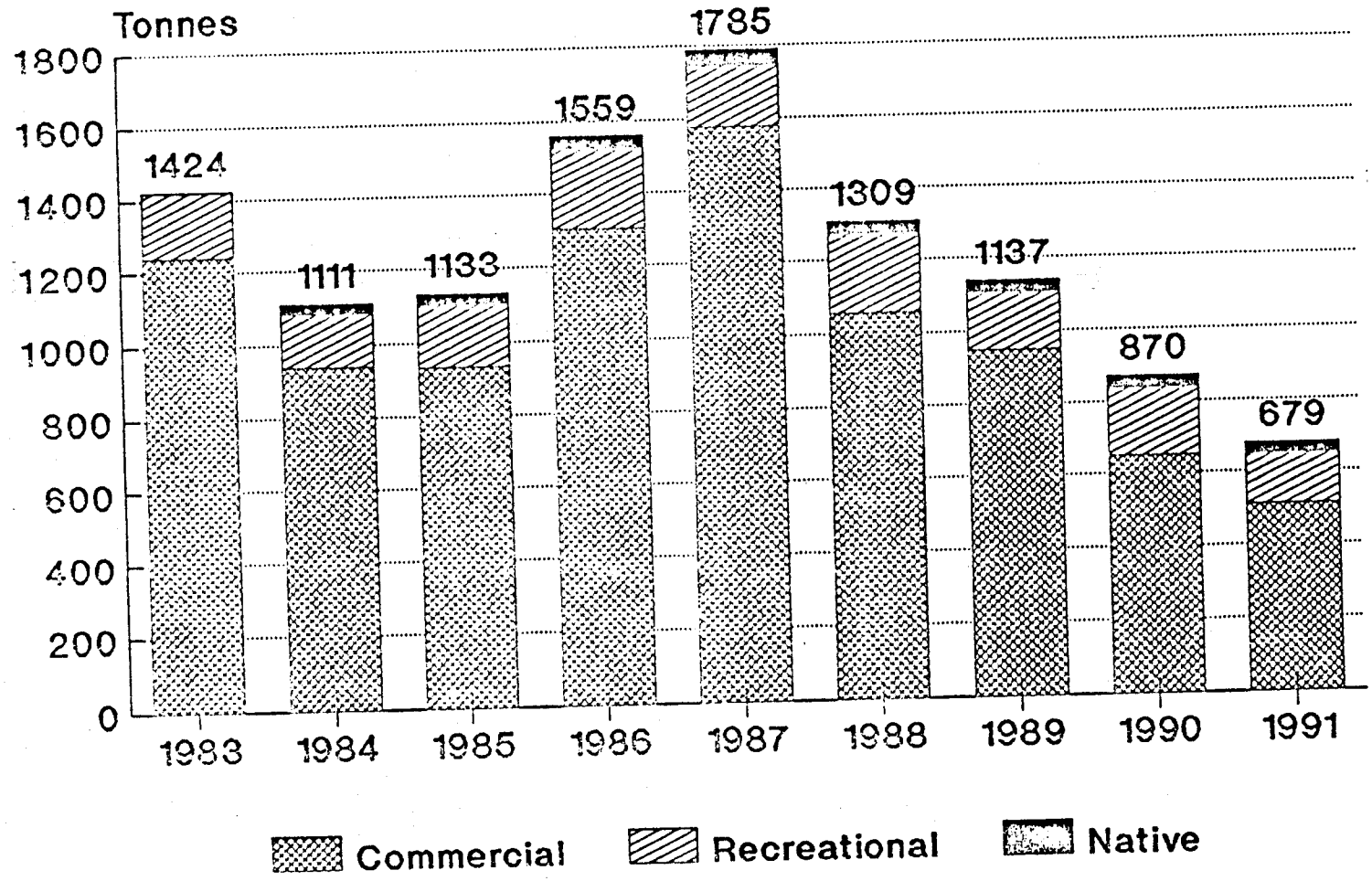
CANADIAN ATLANTIC SALMON LANDINGS
ALL SECTORS, ALL AREAS, 1960-1990



Source: DFO, 1992

As of January 31, 1992

CANADIAN CATCHES OF ATLANTIC SALMON
ALL AREAS, BY SECTOR, 1983-1991



Source: DFO, 1992.

As of January 31, 1992

CANADIAN ATLANTIC SALMON CATCHES
ALL AREAS, BY SECTOR, 1983-1991
(Tonnes)

YEAR	COMM	REC	NATIVE	TOTAL
1983	1,242	182	NA	1,424
1984	939	145	27	1,111
1985	933	171	29	1,133
1986	1,306	222	31	1,559
1987	1,576	169	40	1,785
1988	1,055	222	32	1,309
1989	948	159	30	1,137
1990	651	187	32	870
1991	512	138	29	679

SOURCE: DFO, 1992.

NOTES:

(1) The decline in commercial catches is obvious above: landings dropped by 62% between 1987 and 1991. This was not influenced by the maritime commercial fishery closure, which took effect in 1985, two years before 1987. In fact, commercial landings rose for two years after the maritime fishery closed, in both Newfoundland-Labrador and Quebec (a 69% increase for the two provinces combined, 1987 over 1985).

ANNEX 13

NORTH AMERICAN COMMISSION

NAC(92)14

PREVIOUS LICENCE RETIREMENTS

PREVIOUS LICENCE RETIREMENTS

ATLANTIC CANADA

1986-87

Nova Scotia:	Voluntary	-	172 of 215 fishermen;
		-	min $8k; max $22k;
		-	based on 5x best yr (81-83);
		-	$1.4m cost, from ERDA & prov. (£300k)
P.E.I.:	Voluntary	-	4 of 5 fishermen;
		-	min $8k; max $22k;
		-	based on 5x best yr (81-83);
		-	$32k cost, all from ERDA
New Brunswick:	Voluntary	-	172 of 218 fishermen;
		-	min $15k; max $45k;
		-	based on 8x best yr (81-83);
		-	$5.7m cost, from ERDA & prov ($3.68m);
		-	prov. later added $5k/person bonus;

1985-6

Maritimes:		-	$4k/person compensation for income loss;
		-	considered as part of 86-87 retirement;
		-	£1.7m cost from Atlantic Fisheries Development Program (AFDP)

1985

Newfoundland:	Mandatory	-	552 of 669 part time fishermen;
		-	remaining 117 not allowed to renew;
		-	min $750; max $2k;
		-	annual compensation over 5 yr period;
		-	$872k cost from AFDP (DFO A-base)

1984

Newfoundland:	Voluntary	-	665 of 4,150 full time fishermen;
		-	min $3k; max $15k;
		-	based on 3x best yr (81-83);
		-	compensation over 5 yr period;
		-	$2.2m cost from AFDP (DFO A-base)
	Mandatory	-	147 of 153 zone 12 (J2) fishermen;
		-	remaining 6 not allowed to renew;
		-	min $3k; max $25k;
		-	based on best yr (81-83);

- payment each yr for 5 yr period;
- $1.9m cost from AFDP (DFO A-base)

1981

New Brunswick:	Voluntary	-	271 of 489 fishermen;
		-	$2k or amt = to comp during 72-80 ban;
		-	$680k cost from new fund (T.B. Sub)
		-	Keleher award (1989 Federal Court of Canada): $52k/person (9);
		-	Guimond settlement: $550k proposed (1991)

1972-80 - Compensation for Ban on Fishing

New Brunswick:	Voluntary	-	489 fishermen;
		-	avg gross income (best 3 in last 5 yrs);
		-	$10m cost from new funds (T.B. Sub.)
Newfoundland:	Voluntary	-	152 drift net fishermen;
		-	$2.62k/operator & $1.31k/crew member;
		-	$2.7m cost from new funds (T.B. Sub.)

1973 - Purchase of Fishing Gear & Licence Removal

Newfoundland:	Voluntary	-	1,022 fishermen;
		-	based on value of gear;
		-	$852k cost from new funds (T.B. Sub.)

QUEBEC

Summary 1972 to 1991

North Shore: - 40 fishermen at $1,045,457;
- 152 remain

Gaspé: - 139 fishermen at $2,684,286;
- 6 remain

1991

North Shore: - 16 fishermen at $662,123 (Que)

1990

North Shore: - 9 fishermen at $257,873 (Que)

Gaspé: - 27 fishermen at $1,908,913 (Que)

1988

North Shore: - 3 fishermen at $43,967 (Que)

1986

North Shore: - 1 fisherman at $6,632 (Que)

1985

North Shore: - 2 fishermen at $13,913 (Que)
Gaspé - 5 fishermen at $108,447 (Que)

1984

North Shore: - 9 fishermen at $60,949 (Que)
Gaspé: - 96 fishermen at $134,054 (Que)

1982

Gaspé: - 29 fishermen at $202,323 (Que)

1981-82 for Fishermen without Salmon Gear

Gaspé: - 13 fishermen at $14,258 (Que)

1972

Gaspé: - 56 fishermen at $316,921 (federal)
- opt for payment for gear or comp during 1972-81 ban

ANNEX 14

NORTH AMERICAN COMMISSION

NAC(92)15

CHRONOLOGY OF MANAGEMENT MEASURES

CHRONOLOGY OF MANAGEMENT MEASURES

1966 - small Anticosti Island commercial fishery closed.

1972 - all commercial salmon fishing stopped in NB & Gaspé; fishermen retired and/or compensated (545).

- driftnets banned in 1972 (Nfld & N.B.); some fishermen retired and/or compensated (152).

1973 - some licence retirement (1,022) in Nfld.

1975 - new licensing policy implemented:
  - freeze on new entrants;
  - policy of attrition; and
  - strict transfer rules.

1976 - licensing policy modified to eliminate persons employed full-time in non-fishery jobs.

- salmon-specific licences introduced in Quebec.

1978 - reduced fishing seasons in Cape Ray areas (now 12 & 13).

- changes in herring & mackerel seasons to reduce salmon by-catch.

1979 - to reduce salmon by-catch in Nfld & Lab:
  - min mesh size in cod leaders increased to 177mm;
  - monofilament prohibited in cod traps.

1981 - limited commercial fishery re-opened in N.B.

- commercial salmon seasons reduced for all areas of Nfld & Lab. except ones with more stringent seasons.

- Bay of Islands (Nfld) closed to cod traps.

- area outside 2 nauts of Port-aux-Basques, Nfld closed to salmon fishing.

- tagging introduced for anglers in New Brunswick.

- some licence retirement in N.B. (271)

1982 - 29 licences retired in Gaspé.

- management zones implemented (14 in Nfld & Lab).

1983 - salmon-specific licences introduced in N.S. & P.E.I.

- tagging introduced for anglers in N.S.

- gear (amount) standardisation re: full & part-time.

1984 - delay in opening commercial season in Nfld & Lab. by two weeks from May 20 to June 5.

- part of N.B. commercial fishery closed (Miramichi & Saint John rivers).

- shorter & delayed seasons in most commercial fisheries in the Maritimes.

- tagging introduced for anglers in Quebec.

- angler retention of large salmon (>63 cm) prohibited in Maritime Provinces and in part of Nfld.

- N.S. angling limits to 10 per season, 2 per day & possession limit of 6 (from 15, 5 & 8).

- Quebec angling limit in Gaspé & North Shore to 1 per day from 2 and a seasonal limit (7) introduced.

- area J_2 (now 12) closed to salmon fishing & mandatory retirement of 147 licences (6 others not re-issued).

- transfer of commercial licences limited to immediate family & no transfer of part-time licences.

- retention of salmon caught incidentally prohibited.

- voluntary retirement of commercial licences in Nfld & Lab. (665).

- Gaspé areas of Quebec closed to commercial fishing and some licence retirement in Quebec.

1985 - closure of commercial fishery in rest of Maritimes.

- mandatory retirement of part-time commercial licences (552) in Nfld & Lab. (other 117 not allowed to renew).

- tagging implemented for anglers in P.E.I. and Nfld & Lab.

- tagging implemented salmon exported from Nfld & Lab.

- angler retention of large salmon (>63 cm) prohibited in all of Nfld.

	-	7 licences retired in Quebec.
	-	Gaspé area remain closed to commercial fishing.
1986	-	fall commercial fishery starts closing earlier (Oct 15 as opposed to Dec 31).
	-	season angling limit (15) introduced in Nfld & Lab.
	-	one licence retired on Quebec North Shore.
1986-87	-	348 licences retired in N.B., N.S. & P.E.I.
1988	-	3 licences retired on Quebec North Shore.
1989	-	allowances of salmon totally 1,300t introduced for commercial fishery.
1990	-	quotas of salmon introduced (allowance maintained for Labrador area) - both total 667t.
	-	36 licences retired in Quebec.
	-	stringent regulations establishing controls on salmon rivers on an individual basis established for angling in Quebec.
1991	-	commercial quota lowered to 600t.
	-	Nfld & Lab. angling seasonal limit reduced to 10 from 15.
	-	16 licences retired in Quebec.

ANNEX 15

NORTH AMERICAN COMMISSION

NAC(92)20

1992 ATLANTIC SALMON MANAGEMENT PLAN

TABLED BY CANADA

NAC(92)20

1992 ATLANTIC SALMON MANAGEMENT PLAN TABLED BY CANADA

Guiding Principles and Major Elements

1992 ATLANTIC SALMON MANAGEMENT PLAN

The 1992 Atlantic Salmon Management Plan is divided into major components. This permits easier reference to the appropriate measures applicable in each geographic region and Salmon Fishing Area (SFA). Description and a map of the Salmon Fishing Areas are found in annexes 1 and 2.

The News Release of the plan is contained in the first section which is followed by sections on the principles and objectives 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 1992 Atlantic Salmon Management Plan followed by the general policies and measures regarding closures, licensing, tagging, gear and enforcement in Gulf, Scotia-Fundy, and Newfoundland regions. Specific management initiatives and guidelines for particular Salmon Fishing Areas are also included.

NEWS RELEASE
COMMUNIQUE

NR-HQ-92-46e

FOR IMMEDIATE RELEASE
June 2, 1992

MINISTER CROSBIE ANNOUNCES 1992 ATLANTIC SALMON MANAGEMENT PLAN

OTTAWA ... John C Crosbie, Minister of Fisheries and Oceans and Minister for the Atlantic Canada Opportunities Agency, today released details of the 1992 Atlantic salmon management plan. The plan, a blueprint for the conservation of salmon stocks, was developed following consultations with the Atlantic Salmon Advisory Board, provincial governments and all user groups.

"The cornerstone of the 1992 plan is the conservation of Atlantic salmon," said Mr Crosbie. "In order to rebuild our salmon stocks, sacrifices will have to be made by all."

Newfoundland and Labrador recreational fishermen will participate in the conservation effort by adhering to area and river quotas and delays in the opening of the fishery. Salmon Fishing Area 8 will be closed this year due to extremely low catch rates in 1991.

Seasonal bag limits will be reduced from ten to eight in all Atlantic provinces except Prince Edward Island where the bag limit will be seven. Anglers also will observe other seasonal and quota restrictions throughout the season that reflect local conservation requirements. Fisheries regulations are being amended to allow catch and release angling when quotas have been reached in salmon fishing areas.

"The $40-million Canada-Newfoundland program to retire commercial salmon licences in Newfoundland and Labrador along with the five-year moratorium in the Newfoundland salmon commercial fishery will make significant contributions to rebuilding this important resource."

"I am encouraged by the degree of commitment to conservation expressed by aboriginal communities in our ongoing consultations to develop cooperative management of the salmon resource."

Other efforts are under way to conserve and protect salmon and safeguard its habitat. Agreements with the Atlantic provinces are currently being negotiated to map out a comprehensive plan for rebuilding Atlantic salmon stocks. In Newfoundland and Labrador, a voluntary "River Watch" program will be in effect during peak fishing periods.

Canada will continue its active role within the North Atlantic Salmon Conservation Organization (NASCO) to ensure that Canadian efforts to restore salmon stocks are not undermined by overfishing outside Canadian waters.

"We will press for further reductions of West Greenland interceptions of salmon migrating from our waters," said the Minister. "We also will seek the implementation of enforcement measures within NASCO that will ensure the reporting of all high-seas catches of Atlantic salmon."

"Domestically, salmon fishing regulations will be strictly enforced. Those who choose to harm the resource through illegal fishing activity will be prosecuted to the fullest extent of the law."

"Conservation is the overriding priority for managing this fishery. Restoring Atlantic salmon stocks hinges on the cooperation of all user groups as well as federal and provincial governments. Within these partnerships, conservation priorities will include stock enhancement, habitat improvement, stock assessment and cooperative enforcement initiatives."

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1992 ATLANTIC SALMON MANAGEMENT PLAN

The 1992 Atlantic Salmon Management Plan is guided by the principles adopted by the Department of Fisheries and Oceans (DFO) 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 and area representations from interested associations and organizations.

In the province of Quebec, the provincial government administers management plans for the salmon stocks in that province.

OBJECTIVES

The main objectives of the 1989-1993 management strategy are to ensure that target spawning requirements are met in the Maritime provinces, and that spawning levels increase in insular Newfoundland rivers.

PRINCIPLES

1. Conservation of Atlantic salmon stocks remains the overriding priority in the management of this fishery. This priority includes measures aimed specifically at the large salmon component in order to increase spawning escapement.

2. The importance of fishing to aboriginal communities is recognized and is given first priority after conservation. It is DFO policy to respect and honour the aboriginal right to fish for food, social and ceremonial purposes.

3. The Atlantic salmon fishery 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 is given greater recognition based on the relatively larger potential benefits to be generated. In Newfoundland and Labrador, the commercial fishery has traditionally been of greater importance. However, the recreational fishery offers considerable potential for economic benefits.

5. Allocation of Atlantic salmon stocks will be made by Salmon Fishing Area 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 fishing area and the introduction of quotas.

7. Incidental catches of Atlantic salmon by commercial fishermen 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 Atlantic salmon stocks for commercial and recreational fisheries will be regulated by all or a combination of the following: seasons, quotas, gear and licensing restrictions. The Aboriginal Food Fishery will be governed by DFO's National Policies on management and enforcement for the Aboriginal People's Food Fishery.

9. Atlantic salmon enhancement plans and habitat restoration initiatives will be developed under the auspices of the five-year "Canada-Newfoundland Salmonid Conservation and Enhancement Cooperation Agreement" and recreational fisheries cooperation agreements with other Atlantic Provinces.

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

11. The practice of tagging salmon catches will be maintained.

MAJOR ELEMENTS

1. The commercial salmon fishery for the Island portion of Newfoundland is closed. 1992 is the first year of a five-year closure, which is a major part of the effort to rebuild depressed stocks of Atlantic salmon. The commercial salmon fisheries in the Maritime Provinces will remain closed.

2. A program for the voluntary retirement of commercial salmon licences in the Province of Newfoundland and Labrador has been implemented for 1992. Copies of the News Release and backgrounder on the licence retirement program are attached as Annex 3.

3. The commercial fishery in Labrador will remain open and the season will commence on June 5, 1992. In Salmon Fishing Area (SFA) 1, the allowance of 80t is retained for this largely native, mixed salmon/char fishery. The quotas for the southern Labrador commercial fishery (SFAs 2 and 14B) will be reduced from 1991 levels as commercial licences are retired from the fishery. This reduction will be based on the total retirement in these areas as of June 5.

4. In 1992, the Department of Fisheries and Oceans will continue zonal/river management in selected areas. This approach will be expanded to other areas of the Atlantic Provinces if evaluations of this management scheme reveal positive results.

5. Only full-time fishermen will be eligible to hold commercial 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 commercial salmon licence. During this two-year period, fishermen down-graded to part-time will be eligible to hold their commercial salmon licence.

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

7. Transfers of commercial fishing licences will not be permitted in the Maritime Provinces and in Newfoundland and Labrador in 1992.

8. 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 (63cm 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 has been done since 1984.

9. Recreational fishing quotas are established for each of the Salmon Fishing Areas in Newfoundland and Labrador. These overall quotas will help ensure that much of the salmon that escapes as a result of the commercial closure will reach the spawning grounds. As a further conservation measure, the opening of the angling seasons in Newfoundland and Labrador is delayed by about a week. Anglers in the Atlantic Provinces may also be limited to only hook and release fishing in various areas or waters.

10. In all Atlantic Provinces, fishing limits such as seasons and quotas may be adjusted to reflect stock or environmental conditions.

11. The seasonal limits for all Atlantic Provinces except PEI are reduced from 10 to 8. In PEI, the seasonal bag limit has been raised from 5 to 7 and the possession limit has been raised from 1 to 2. In Nova Scotia and New Brunswick daily bag limits of 2 and possession limits of 6 remain in effect. The PEI daily bag limit remains at 1. In Newfoundland and Labrador, the daily bag limit remains at 2 per day and the possession limit remains at twice the daily catch limit.

12. 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 bag limit.

13. During 1992, the tagging systems will be maintained in the Atlantic Provinces for all fisheries. Less costly alternatives to tagging will be explored for aquaculture salmon.

14. 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 are encouraged. Interest groups will be asked to assist enforcement personnel in this regard.

15. Ongoing consultations with aboriginal communities will continue throughout Atlantic Canada with the objective of arriving at mutually acceptable plans for the exercise and management of the aboriginal peoples food fishery. Consultations will also be aimed towards determining the overall role and participation to be given to aboriginal communities in the management and enforcement of the Atlantic salmon fishery.

16. During 1992 and under recreational fisheries cooperation agreements, salmon enhancement and habitat restoration activities will be planned and established with the active participation of the Provinces and user groups.

17. The measures taken by the Department of Fisheries and Oceans in 1992 are consistent with Canada's commitment to cooperate within the North Atlantic Salmon Conservation Organization (NASCO). As well, Canada will push for further reductions in the West Greenland interceptions of Canadian origin salmon, seek implementation of measures at NASCO which will require the reporting of all Atlantic salmon harvests and work within NASCO for the elimination of high seas interception of Atlantic salmon.

REGIONAL MANAGEMENT MEASURES

COMMERCIAL CLOSURES

Scotia-Fundy and Gulf Regions (excluding Western Newfoundland and Labrador) - SFAs 15 to 23

The Maritimes commercial salmon fishery remains closed.

Newfoundland Region and Western Newfoundland and Labrador Portion of Gulf Region - SFAs 1 to 14

Beginning this year, the commercial salmon fishery for the Island of Newfoundland (SFAs 3 to 13 and 14A) is closed for five years.

COMMERCIAL LICENSING POLICIES

Scotia-Fundy and Gulf Regions (excluding Western Newfoundland and Labrador) - SFAs 15 to 23

1. As the commercial salmon fishery is closed in the Maritimes, 1992 licences will be issued for record purposes only and at no cost to those 1991 licence holders that wish to retain them.

2. Transfer of licences to another individual will not be permitted in 1992.

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

4. Licences are only valid for the Salmon Fishing Area specified.

Newfoundland Region and Western Newfoundland and Labrador Portion of Gulf Region - SFAs 1 to 14

1. In 1992, licences may be issued to those persons who, in 1991:

   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 1986 season; and

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

Note: Participation in the 1991 salmon fishery will not be a prerequisite to be eligible for a salmon licence in 1992. 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 Salmon Fishing Area specified.

3. Transfer of licences to another individual will not be permitted in 1992.

4. Fishing effort limits for each licensed fisherman will remain at 200 fathoms per licence in 1992.

5. Licences are not available for new entrants in this fishery in 1992.

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

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

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

Province of Newfoundland and Labrador

1. As in 1991, the incidental catch of salmon in traps and nets will be minimized by seasonal and area variations as required. 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.

2. In cod traps, the seven inch (178mm) 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.

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 63cm 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. Area quotas - Quotas are established for each SFA in Newfoundland and Labrador to limit the overall recreational catch and allow stocks to rebuild. These quotas will help ensure the escapement of Atlantic salmon which are not taken because of the commercial closure. After the area quota is taken, closures or a hook and release only fishery will be implemented.

3. River quotas - Quotas are established for individual rivers where there are definite spawning escapement concerns and requirements. After the river quota is taken, closures or a hook and release only fishery will be implemented.

4. Bag limits - In 1992, the bag limits will be:

	N.B.	N.S.	P.E.I.	Nfld and Labrador*
Season	8	8	7	8
Possession	6	6	2	2 x daily 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.

The implementation of hook and release only fisheries is being considered for 1992. These fisheries would be implemented in areas requiring protection, but where conservation requirements do not demand total closure. Hook and release fisheries will be closed where water conditions or temperatures are likely to result in high mortality among released fish.

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.

5. Black salmon fishery - The grilse-only restriction will apply again in 1992. The season remains from April 15 to May 15 in New Brunswick.

6. Seasons - Recreational fishing seasons have been delayed by about a week in the Province of Newfoundland and Labrador. For the rest of the Atlantic Provinces, the seasons remain the same as 1991 in many watersheds, with some adjustments to reflect local conditions. In some cases, the seasons will be announced after results have been obtained from index rivers or after local consultations have been finalized.

TAGGING PROGRAM

During 1992, the tagging systems will be maintained for the fisheries in Atlantic Canada. To avoid the high costs for aquaculture operations, alternatives to tagging will be explored.

Where tagging is required, salmon caught and retained 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 the Canadian Parks Service will be used for salmon captured in waters within national parks.

ENFORCEMENT ACTIVITIES

Where feasible in 1992, 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.

Programs will be in place again in 1992, or have already been established as part of the Crime Stoppers Program, to report suspected salmon poaching activities. Toll free numbers will be answered twenty-four hours a day. Consult your local Fisheries and Oceans office for details.

In Newfoundland and Labrador, other enforcement efforts include the use of volunteers in a "River Watch" program, joint enforcement patrols with other agencies and the use of specialized undercover enforcement teams during peak fishing periods.

SALMON FISHING AREAS

SFA 1 - NORTHERN LABRADOR

Commercial Fishery

Allowance - 80t

Waters	Opening/Closing Dates
All coastal waters from Cape Chidley to Fish Cove Point	June 5 - October 15

Recreational Fishery

Area quota: 442 fish

Individual quotas:

Season bag limit - 8 fish

Daily bag limit - 2 fish

Possession limit - 4 fish

Hook & release limit - 4 fish

Seasons

Rivers	Opening/Closing Dates
All rivers running into the coastal waters between Cape Chidley and Fish Cove Point	June 27 - September 20

SFA 2 - SOUTHERN LABRADOR

Commercial Fishery

Quota - reduced from 200t as commercial licences are retired.

Waters	Opening/Closing Dates
All coastal waters from Fish Cove Point to Table Head, St Peter's Bay	June 5 - October 15

Recreational Fishery

Area quota: 2,160 fish

Individual quotas:

Season bag limit - 8 fish

Daily bag limit - 2 fish

Possession limit - 4 fish

Hook & release limit - 4 fish

Seasons

River	Opening/Closing Dates
All rivers running into the coastal waters between Fish Cove Point and Table Head, St Peter's Bay	June 27 - September 20

SFA 3 - WHITE BAY

Commercial Fishery

Waters	Opening/Closing Dates
All coastal waters from Cape Bauld to Cape St John	Closed

Recreational Fishery (Grilse only)

Area quota: 1,300 fish

Individual quotas:

Season bag limit - 8 fish

Daily bag limit - 2 fish

Possession limit - 4 fish

Hook & release limit - 4 fish

Seasons

River	Opening/Closing Dates
All rivers running into the coastal waters between Cape Bauld and Cape St John	June 20 - September 7

SFA 4 - NOTRE DAME BAY

Commercial Fishery

Waters	Opening/Closing Dates
All coastal waters from Cape St John to Cape Freels	Closed

Recreational Fishery (Grilse only)

Area quota: 4,800 fish

Individual quotas:

Season bag limit - 8 fish

Daily bag limit - 2 fish

Possession limit - 4 fish

Hook & release limit - 4 fish

Seasons

River	Opening/Closing Dates
All rivers running into the coastal waters between Cape St John and Cape Freels with the exception of the following:	June 20 - September 7
Indian River, including Burnt Berry Brook	June 27 - August 30
Exploits River and its tributaries	June 27 - August 30

SFA 5 - BONAVISTA BAY

Commercial Fishery

Waters	Opening/Closing Dates
All coastal waters from Cape Freels to Cape Bonavista	Closed

Recreational Fishery (Grilse only)

Area quota: 2,000 fish

Individual quotas:

Season bag limit - 8 fish

Daily bag limit - 2 fish

Possession limit - 4 fish

Hook & release limit - 4 fish

Seasons

River	Opening/Closing Dates
All rivers running into the coastal waters between Cape Freels and Cape Bonavista	June 20 - September 7

SFA 6 - TRINITY BAY

Commercial Fishery

Waters	Opening/Closing Dates
All coastal waters from Cape Bonavista to Grates Point	Closed

Recreational Fishery (Grilse only)

Area quota: 200 fish

Individual quotas:

Season bag limit - 8 fish

Daily bag limit - 2 fish

Possession limit - 4 fish

Hook & release limit - 4 fish

Seasons

River	Opening/Closing Dates
All rivers running into the coastal waters between Cape Bonavista and Grates Point	June 20 - September 7

SFA 7 - CONCEPTION BAY

Commercial Fishery

Waters	Opening/Closing Dates
All coastal waters from Grates Point to Cape St Francis	Closed

Recreational Fishery (Grilse only)

Area quota: 40 fish

Individual quotas:

Season bag limit - 8 fish

Daily bag limit - 2 fish

Possession limit - 4 fish

Hook & release limit - 4 fish

Seasons

River	Opening/Closing Dates
All rivers running into the coastal waters between Grates Point and Cape St Francis	June 20 - September 7

SFA 8 - SOUTHERN SHORE

Commercial Fishery

Waters	Opening/Closing Dates
All coastal waters from Cape St Francis to Cape Pine	Closed

Recreational Fishery (Grilse only)

This fishery is closed for conservation reasons.

Seasons

River	Opening/Closing Dates
All rivers running into the coastal waters between Cape St Francis and Cape Pine	Closed

SFA 9 - SOUTHERN SHORE

Commercial Fishery

Waters	Opening/Closing Dates
All coastal waters from Cape Pine to Cape St Mary's	Closed

Recreational Fishery (Grilse only)

Area quota: 600 fish

Individual quotas:

Season bag limit - 8 fish

Daily bag limit - 2 fish

Possession limit - 4 fish

Hook & release limit - 4 fish

Seasons

River	Opening/Closing Dates
All rivers running into the coastal waters between Cape Pine and Cape St Mary's with the exception of the following:	June 20 - September 7
Colinet River	Closed
Rocky River	Closed

SFA 10 - PLACENTIA BAY

Commercial Fishery

Waters	Opening/Closing Dates
All coastal waters from Cape St Mary's to Point Crewe	Closed

Recreational Fishery (Grilse only)

Area quota: 200 fish

Individual quotas:

Season bag limit - 8 fish

Daily bag limit - 2 fish

Possession limit - 4 fish

Hook & release limit - 4 fish

Seasons

River	Opening/Closing Dates
All rivers running into the coastal waters between Cape St Mary's and Point Crewe with the exception of the following:	June 20 - September 7
Northeast River, Placentia	June 20 - August 30
Southeast River, Placentia	June 20 - August 30
Tides Brook including Main Brook and Shearstick	June 20 - August 30

SFA 11 - SOUTH COAST

Commercial Fishery

Waters	Opening/Closing Dates
All coastal waters from Point Crewe to Fox Point, Burgeo	Closed

Recreational Fishery (Grilse only)

Area quota: 1,700 fish

Individual quotas:

Season bag limit - 8 fish

Daily bag limit - 2 fish

Possession limit - 4 fish

Hook & release limit - 4 fish

Seasons

River	Opening/Closing Dates
All rivers running into the coastal waters between Point Crewe and Fox Point, Burgeo with the exception of the following:	June 20 - September 7
Bottom Brook, Fasheau Bay	June 20 - August 30
Cinq Cerf River	Closed

SFA 12 - SOUTHWESTERN NEWFOUNDLAND

Commercial Fishery

Waters	Opening/Closing Dates
All coastal waters from Fox Point, Burgeo to Cape Ray	Closed

Recreational Fishery (Grilse only)

Area quota: 600 fish

Individual quotas:

Season bag limit - 8 fish

Daily bag limit - 2 fish

Possession limit - 4 fish

Hook & release limit - 4 fish

Seasons

River	Opening/Closing Dates
All rivers running into the coastal waters between Fox Point, Burgeo and Cape Ray	June 6 - September 7

SFA 13 - WESTERN NEWFOUNDLAND

Commercial Fishery

Waters	Opening/Closing Dates
All coastal waters from Cape Ray, to Cape St Gregory	Closed

Recreational Fishery (Grilse only)

Area quota: 5,000 fish

River quotas:

Barachois River - 175 fish

Fischell's Brook - 200 fish

Flat Bay Brook - 250 fish

Fox Island River - 50 fish

Harry's River (Lower & Middle) - 350 fish

Humber River (Adies Lake) - 100 fish

Serpentine River (Lower) - 150 fish

Individual quotas:

Season bag limit - 8 fish

Daily bag limit - 2 fish

Possession limit - 4 fish

Hook & release limit - 4 fish

Seasons

River	Opening/Closing Dates
All rivers running into the coastal waters between Cape Ray and Cape St Gregory with the exception of the following:	June 6 - September 7
Cook's Brook	August 1 - September 7
Goose Arm River	June 20 - September 7

River	Opening/Closing Dates
Harry's River	June 20 - September 7
Highlands River	Closed
Hughes Brook	Closed
Humber River (Adies Lake)	June 6 - August 2
Little Barachois Brook	June 20 - September 7
Little Codroy River	June 20 - September 7
North Brook (tributary to Deer Lake on Humber River)	Closed

SFA 14A - NORTHWESTERN NEWFOUNDLAND

Commercial Fishery

Waters	Opening/Closing Dates
All coastal waters from Cape St Gregory to Cape Bauld	Closed

Recreational Fishery (Grilse only)

Area quota: 3,900 fish

River quotas:

Lomond River - 350 fish

Pincent's Brook - 10 fish

Watson's Brook - 50 fish

Individual quotas:

Season bag limit - 8 fish

Daily bag limit - 2 fish

Possession limit - 4 fish

Hook & release limit - 4 fish

Seasons

River	Opening/Closing Dates
All rivers running into the coastal waters between Cape St Gregory and Cape Bauld with the exception of the following:	June 13 - September 7
Bound Brook	Closed
Parker River	July 25 - September 7
St Genevieve River	June 6 - September 7
Ten Mile Feeder Brook (tributary to Upper St Genevieve River)	Closed

River	Opening/Closing Dates
Torrent River	After 1,000 salmon through fishway - September 7
West River, St Barbe	Closed
Western Brook	Closed

SFA 14B - SOUTHERN LABRADOR

Commercial Fishery

Quota - reduced from 15t as commercial licences are retired.

Waters	Opening/Closing Dates
All coastal waters from Point Charles to Cape St Charles	June 5 - October 15

Recreational Fishery

Area quota: 1,100 fish

Individual quotas:

Season bag limit - 8 fish

Daily bag limit - 2 fish

Possession limit - 4 fish

Hook & release limit - 4 fish

Seasons

River	Opening/Closing Dates
All rivers running into the coastal waters between Point Charles and Cape St Charles	June 6 - September 7

SFA 15 - RESTIGOUCHE RIVER SYSTEM

Commercial Fishery

The commercial salmon fishery remains closed in the New Brunswick portion of the Restigouche River system. There is no commercial fishing in the Quebec portion of this watershed.

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 SFA 15:

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 1992 in the waters of Bay of Chaleur, on a controlled basis only.

Recreational Fishery (Grilse Only)

Season bag limit - 8 fish

Daily bag limit - 2 fish

Possession limit - 6 fish

Hook & release limit - 4 fish

Seasons

Bright Salmon

River	Opening/Closing Dates
SFA 15 and all waters of the Province flowing into that SFA, except the following:	June 1 - October 15
Eel River	July 1 - October 15
Nepisiguit River*	June 1 - October 7
Restigouche River	June 1 - August 31
Kedgwick River	June 1 - August 31

* Except the waters from the mouth of the Big South, to the mouth of Indian Falls Brook which is closed from May 1 to December 31.

River	Opening/Closing Dates
Bartibog River	June 1 - October 15
Cains River	June 8 - October 15
Dungarvon River (and tributaries) above the mouth of Underwood Brook	June 8 - September 15
Little Southwest Miramichi (and tributaries) above Catamaran Brook	June 8 - September 15
Main Southwest Miramichi from head of tide upstream to the mouth of Cains River	June 8 - October 15
Main Southwest Miramichi from the mouth of Burnt Land Brook Upstream to the fork of the North and South Branches	June 8 - September 30
Renous River (and tributaries) above the Forks	June 8 - September 15
Rocky Brook, Southwest Miramichi	June 1 - August 31
Sevogle River above Square Forks	June 8 - September 15
Tabusintac River	July 1 - October 21
Tributaries of main Southwest Miramichi River above Cains River, except Rocky Brook	June 8 - September 15
Bay du Vin River	June 8 - October 15
Richibucto River	June 8 - October 15
Kouchibouguac River	June 8 - October 15
Kouchibouguacis River	June 8 - October 15
Black River	June 8 - October 15
North and South Branches of Main Southwest Miramichi River	June 8 - September 15
Northwest Miramich River including tributaries, upstream of Little River	June 8 - August 31

SFA 17 - PRINCE EDWARD ISLAND

Commercial Fishery

The commercial salmon fishery remains closed.

Recreational Fishery (Grilse only)

Season bag limit - 7 fish

Daily bag limit - 1 fish

Possession limit - 1 fish

Hook and release - 2 fish

Seasons

River	Opening/Closing Dates
All PEI Rivers with the exception of the following:	June 15 - September 30
Morell River	June 1 - October 31 (subject to variation)

SFA 18 - NORTHUMBERLAND

Commercial Fishery

The commercial salmon fishery remains closed.

Recreational Fishery (Grilse only)

Season bag limit - 8 fish

Daily bag limit - 2 fish

Possession limit - 6 fish

Hook and release - 4 fish

Seasons

River	Opening/Closing Dates
All waters of the SFA 18, with the exception of the following:	September 1 - October 31
Northeast Margaree River, downstream from the Big Intervale Bridges to the Cranton Bridge	June 1 - October 15
Northeast Margaree River, not including tributaries, downstream from the Cranton Bridge to the Highway Bridges at East Margaree	June 1 - October 31
Southwest Margaree River, not including tributaries, downstream from the Scottsville Highway Bridge to the main Margaree River	June 1 - October 31
Northeast Margaree River (upstream from the Big Intervale Bridges)	Closed

SFA 19 - CAPE BRETON EAST

Commercial Fishery

The commercial salmon fishery remains closed.

Recreational Fishery (Grilse only)

Season bag limit - 8 fish

Daily bag limit - 2 fish

Possession limit - 6 fish

Hook and release - 4 fish

Seasons

River	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 15 - October 31
Grand River	June 1 - October 15
Middle River	June 1 - October 15
Mira River	June 15 - October 15
North River, downstream from The Benches	June 1 - October 31
North River, upstream from The Benches	Closed

SFA 20 - EASTERN SHORE

Commercial Fishery

The commercial salmon fishery remains closed.

Recreational Fishery (Grilse only)

Season bag limit - 8 fish

Daily bag limit - 2 fish

Possession limit - 6 fish

Hook and release - 4 fish

Seasons

River	Opening/Closing Dates
All waters of SFA 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 - September 22
Country Harbour River	June 24 - September 22
St Mary's River	June 1 - September 15

SFA 21 - SOUTHWEST NOVA SCOTIA

Commercial Fishery

The commercial salmon fishery remains closed.

Recreational Fishery (Grilse only)

Season bag limit - 8 fish

Daily bag limit - 2 fish

Possession limit - 6 fish

Hook and release - 4 fish

Seasons

River	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
Ingram River	June 1 - August 15
Lahave River, between the bridge on Lower Branch Road in New Germany and Cherryfield Bridge in Cherryfield	Closed
Medway River	May 10 - July 31
Mersey River	May 10 - August 15 and September 1 - September 30
Meteghan River	August 1 - September 30
Petite Rivière	June 15 - August 15
Salmon River	June 1 - August 15
Tusket River	June 1 - August 15

SFA 22 - UPPER BAY OF FUNDY

Commercial Fishery

The commercial salmon fishery remains closed.

Recreational Fishery (Grilse only)

Season bag limit - 8 fish

Daily bag limit - 2 fish

Possession limit - 6 fish

Hook and release - 4 fish

Seasons

River	Opening/Closing Dates
All the waters of the 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:	Dates to be announced depending on counts on index rivers and after consultations with users
Annapolis River	May 15 - August 15
Bear River	August 15 - October 31
Cornwallis River	August 15 - October 31
Gaspereau River	May 15 - August 15
Lequille River	August 15 - October 31
Nictaux River	August 15 - October 31
Paradise River	August 15 - October 31
Round Hill River	August 15 - October 31

SFA 23 - SOUTH WESTERN NEW BRUNSWICK

Commercial Fishery

The commercial salmon fishery (Petitcodiac and Saint John) remains closed

Recreational Fishery (Grilse Only)

Season bag limit - 8 fish

Daily bag limit - 2 fish

Possession limit - 6 fish

Hook & release limit - 4 fish

Seasons

Black Salmon

The season opens on April 15 and closes on May 15.

Bright Salmon

The following seasons are tentative. They are based on the 1991 seasons and may be changed after further consultations.

River	Opening/Closing Dates
Waters tributary to the Bay of Fundy with the following exceptions:	June 1 - October 15
Big Salmon River - upstream of and including Walton Dam Pool	June 1 - September 15
Big Salmon River - downstream from Walton Dam Pool	June 1 - October 15
Hammond River - downstream from French Village Bridge	June 1 - October 31
Hammond River - upstream from French Village Bridge	June 1 - October 15
Kennebecasis River - upstream from the mouth of Trout Creek	June 1 - September 15
Kennebecasis River - downstream from the mouth of Trout Creek	June 1 - October 15

River	Opening/Closing Dates
Nashwaak River - upstream from the bridge at Stanley	June 1 - September 30
Nashwaak River - downstream from the bridge at Stanley	June 1 - October 15
St John River - upstream from the Grafton Bridge at Woodstock	June 1 - September 30
St John River - downstream from the Grafton Bridge at Woodstock	June 1 - October 15
Petitcodiac River	Closed all year
Point Wolfe River	Closed all year
St Croix River	June 1 - September 15
Tobique River	June 1 - September 15

ANNEX 1

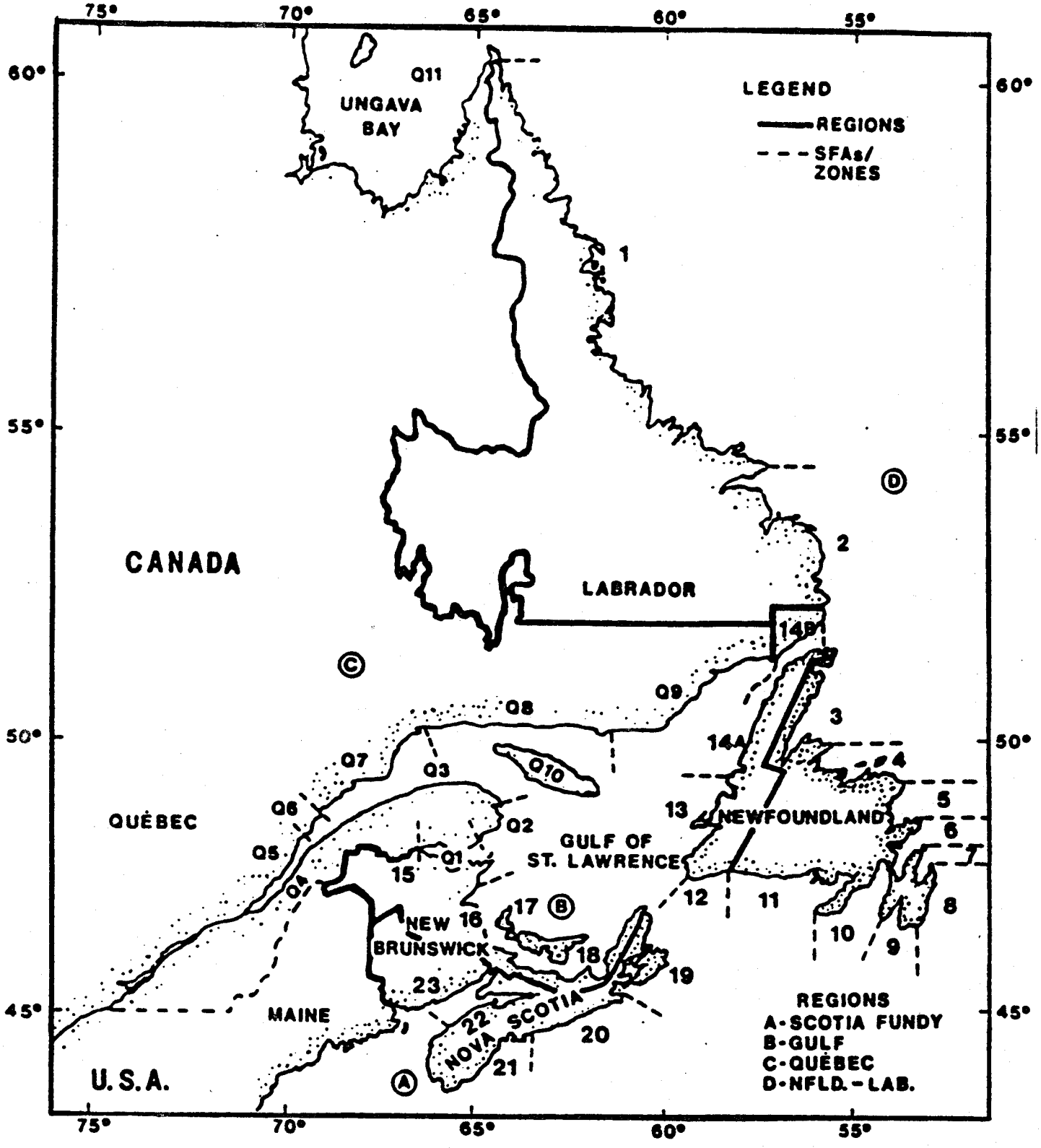
SALMON FISHING AREAS (SFA)

SFA		PROVINCE	REGION
1 -	Cape Chidley to Fish Cove Point	Newfoundland	Newfoundland
2 -	Fish Cove Point to Table Head, St Peter's Bay	Newfoundland	Newfoundland
3 -	Cape Bauld to Cape St John	Newfoundland	Newfoundland
4 -	Cape St John to Cape Freels	Newfoundland	Newfoundland
5 -	Cape Freels to Cape Bonavista	Newfoundland	Newfoundland
6 -	Cape Bonavista to Grates Point	Newfoundland	Newfoundland
7 -	Grates Point to Cape St Francis	Newfoundland	Newfoundland
8 -	Cape St Francis to Cape Pine	Newfoundland	Newfoundland
9 -	Cape Pine to Cape St Mary's	Newfoundland	Newfoundland
10 -	Cape St Mary's to Point Crewe	Newfoundland	Newfoundland
11 -	Point Crewe to Fox Point, Burgeo	Newfoundland	Newfoundland
12 -	Fox Point, Burgeo to Cape Ray	Newfoundland	Gulf
13 -	Cape Ray to Cape St Gregory	Newfoundland	Gulf
14A -	Cape St Gregory to Cape Bauld	Newfoundland	Gulf
14B -	Point Charles to Cape St Charles	Newfoundland	Gulf
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

SFA		PROVINCE	REGION
21 -	Southwest Nova Scotia	Nova Scotia	Scotia-Fundy
22 -	Upper Bay of Fundy	Nova Scotia	Scotia-Fundy
23 -	Saint John	New Brunswick	Scotia-Fundy

ANNEX 2

MAP SHOWING SALMON FISHING AREAS



ANNEX 3

CANADA **NEWFOUNDLAND**

NR-HQ-92-18E

For Immediate Release
March 6, 1992

CANADA AND NEWFOUNDLAND OFFER $40 MILLION TO RETIRE COMMERCIAL SALMON FISHING LICENCES

ST. JOHN's -- John C Crosbie, Minister of Fisheries and Oceans and Minister for the Atlantic Canada Opportunities Agency, and Newfoundland Fisheries Minister, Walter Carter, today announced a jointly-funded offer of cash payments to commercial salmon fishermen who voluntarily retire licences issued in their name. The offer is the cornerstone of a major program to conserve and enhance the stock of Atlantic salmon.

Payments to commercial licensees will range from $8,000 to $50,000, depending on the level of their salmon landings in the best year out of the past three. Payments will be made after they agree to the terms of the offer and turn in their salmon fishing gear.

Total cost of the retirement program is expected to be about $40 million, to be shared 70-30 by the federal government and the province.

Recreational salmon fishermen in all Atlantic provinces also will be observing new fisheries management initiatives in support of conservation and habitat renewal. In accord with the judicial Sparrow decision, allowances will be made for the right of aboriginal peoples to fish for food.

"Salmon is a significant share of many fishermen's livelihood," said Mr Crosbie. "We have made this retirement program as generous as possible so that those who accept it will have funds to invest in alternative economic activity".

"If the Atlantic salmon is to recover to the abundance of a generation ago, there is no alternative but to sharply curtail commercial salmon fishing," said Mr Crosbie. "This is a voluntary program. However, I hope that the great majority of licence holders in the province will choose to accept our offer."

Mr Carter said that recent restrictions upon the commercial sector, such as reduced seasons and quotas, have not rebuilt the salmon resource and, therefore, fishermen would have to face further restrictions in the future.

"In this context," he said, "this offer allows fishermen the option of accepting up to eight times the value of their best year's landings since 1989 and, given the current state of the resource, may be acceptable to many salmon licence holders."

Commercial salmon fishing was discontinued in Prince Edward Island, Nova Scotia and New Brunswick nearly 10 years ago. Newfoundland and Labrador is the only Atlantic province where it is permitted. There are just under 3,000 licensees still active in the province.

Despite prior licence retirements and other conservation measures, preliminary figures for 1991 indicate the fourth consecutive year of a declining commercial catch in Newfoundland and Labrador, with landings of just 433 tonnes. This is 39 per cent below the lowest catch in all of the 1980s (798 tonnes in 1984).

Coincident with the retirement offer, a minimum five-year closure of the commercial salmon fishery for the Island portion of the Province will take effect.

For Labrador, with its high dependence on salmon and limited prospects for fisheries diversification, there will not be a fishing moratorium. In order to increase stocks, those who choose to retain licences will not be free to take up the catch foregone by those who accept retirement.

The allowable salmon catch in Labrador will decrease in the same proportion as licences are retired. Continuing licensees will remain subject to restrictions on their catch, up to and including prohibition, for reasons of conservation. Fewer than one in seven of the commercial licences outstanding in the province is held in Labrador, an estimated 418 out of 2,979 licences in 1991.

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BACKGROUNDER
FICHE D'INFORMATION

B-HQ-92-10E

NEWFOUNDLAND AND LABRADOR ATLANTIC SALMON INITIATIVES

For many years federal and provincial governments and user groups have been concerned about finding ways and means to conserve and enhance the dwindling Atlantic salmon resource.

This matchless food and game fish is highly prized. It was once so numerous in North Atlantic waters that its abundance was taken for granted. In 1967 commercial landings of 2,853 tonnes were better than four times higher than the current catch. The recreational catch of about 80,000 Atlantic salmon that year has not come near to being equalled in the quarter century since. Historically, Atlantic salmon was a valuable food source for natives and an important trading commodity for European settlers in the New World.

But in recent years pressure from overfishing, pollution and obstruction of freshwater habitat have seriously depleted salmon stocks.

Enhancement measures have included programs to restore and improve habitat, preserve and strengthen the stocks and limit the catches of the various parties exploiting the resource.

Bag limits, length of season and the size of salmon that can be taken for recreational fishing have been steadily constrained over the past decade in response to scientific assessments of the wild stock and measured observation of the actual catch.

Nevertheless the salmon catch continues to decrease.

There are many constraints on the resource, including habitat degradation and marine conditions. Some are not of our making or beyond our control.

The licence retirement offer put forward jointly by Newfoundland and Labrador and Canada is an essential first step to support a region-wide program of habitat renewal, enhancement activities, international efforts to curb foreign interception of stocks, more stringent sportfishing regulations in rivers where further control is required and overall fisheries management and enforcement.

The goal is to restore the salmon stocks of Newfoundland and Labrador, the lower north shore of Quebec, Nova Scotia, Prince Edward Island and New Brunswick.

Cooperation agreements between the provinces and Ottawa are under negotiation. They will involve a broad coalition of groups concerned with resource conservation, sportfishermen, fishery-related industries and different agencies and levels of government.

All commercial salmon fishing was banned in New Brunswick and Quebec's Gaspé peninsula in 1972. Re-opened in NB on a limited basis in 1981, when there was evidence of stock

recovery, the commercial salmon fishery was closed again in 1983 in all three Maritime provinces.

In Quebec, where the provincial government has the primary role in managing the fishery, commercial salmon licences are being retired in a graduated phase-out.

In Newfoundland commercial fishing has been permitted to continue because salmon has traditionally provided a part of fishermen's overall income in that province, most particularly in Labrador.

But commercial harvesting reduces spawning escapements with a negative impact on reproduction and the quantity of stocks. The Newfoundland gillnet fishery affects stocks in all Atlantic provinces by catching salmon off the coast before they can return to spawn in their home rivers on the mainland.

The Department of Fisheries and Oceans, which is responsible for the prudent management of Canada's fishery resource for the benefit of all Canadians, has adopted a renewal program for the salmon fishery with three main thrusts:

A. Conservation Priority: The retirement of commercial salmon licences is one conservation measure. Others will be implemented in the course of a fisheries development program that will help to sustain economic development and increase employment in Atlantic Canada by supporting enhancement initiatives and business ventures in areas such as infrastructure improvement. The program will promote angling by tourists and residents within guidelines of the conservation goals.

DFO and ACOA (Atlantic Canada Opportunities Agency) are negotiating cooperation agreements with each of the Atlantic provinces for the development of fisheries.

In addition, the fast-growing aquaculture industry has contributed to the conservation and renewal of Atlantic salmon resources. New and improved technologies for rearing salmon have been developed and applied in enhancement programs. Research into the culture of Atlantic salmon has improved understanding of the biology of the species, leading to improved management. Aquaculture also provides a useful employment alternative in some areas.

B. Management of Aboriginal Food Fishery: The licence retirement offer and all associated catch reductions will be consistent with DFO and ACOA policies, undertakings and agreements with native groups.

DFO will continue to manage the native food fishery in a manner consistent with the Supreme Court of Canada's Sparrow decision, and will continue discussions with aboriginal peoples with respect to fishing rights and opportunities.

C. Commercial Retirement: In Newfoundland and Labrador the commercial salmon catch is declining in size and economic importance. Preliminary indications are that the value of landings in 1991 will be less than a third of what they were in 1980.

The governments of both Newfoundland and Labrador and Canada are jointly proposing a voluntary commercial licence retirement program. Commercial licence holders will be

encouraged to turn in their gear and retire licences issued in their names in return for ex-gratia payments between $8,000 and $50,000, depending on the level of the retiree's salmon landings in the best year out of the past three.

Coincident with the retirement offer, a minimum five-year closure of the insular Newfoundland salmon fishery will take effect.

For Labrador, with its high dependence on salmon and limited prospects for fisheries diversification, there will not be a fishing moratorium. A voluntary licence retirement program will be offered under essentially the same terms as for insular Newfoundland. Those who choose to retain licences will not be free to take up the catch foregone by those who accept retirement.

The total allowable salmon catch in Labrador will diminish in the same proportion as licences are retired. Continuing licensees still will be subject to restrictions on their catch for reasons of conservation. Fewer than one in seven of the commercial licences outstanding in the province is held in Labrador, an estimated 418 out of 2,979 licences in 1991.

THE RETIREMENT OFFER

01. Fishermen with commercial salmon licences, valid in 1991, will be eligible to retire their licences, with ex gratia compensation, while this offer remains in force.

02. The commercial salmon fishery in insular Newfoundland (excludes SFA Zones 2 and 14(B)) will be closed for at least five years. Continued commercial fishing will be permitted for fishermen in Zones 2 and 14(B) who choose to retain their salmon licences.

03. The offer will be in force from the date of announcement until October 31, 1992. Labrador fishermen, whose claims have not been settled by the opening of the commercial fishing season in early June 1992, will not have their claims processed until after October 31, 1992. Fishermen in SFA zone 1 will be considered separately following further consultations with native groups and commercial licence holders.

04. Licences will be retired permanently.

05. As a condition of compensation, licence retirees will turn in salmon nets at a time and place to be indicated by DFO.

06. Retirees will be offered either:

    (i) As a minimum, an ex gratia payment of $8,000, if they choose not to, or do not have documents acceptable to DFO establishing the value of their landings;
    (ii) An ex gratia payment equal to eight times the value of the retiree's salmon landings in the best year out of the past three years, up to a maximum of $50,000 per retiree. This must be documented by purchase slips or other verifiable receipts.

07. Payments will be made at the time the licence is retired, the gear turned in and fishermen have accepted compensation offered.

08. Those who choose to retain and renew commercial salmon licences will not be compensated for any fishery closure. If it is decided to re-open the fishery at a later date, subject to policies in effect at that time, those who retained and renewed their licences would be able to fish again. There is no guarantee this fishery will ever re-open, however.

09. Those who voluntarily retire their licences may be considered for re-entry if the fishery re-opens and new licences are issued, subject to policies in effect at that time.

Appeals

An Advisory Committee will be set up by DFO and the Newfoundland and Labrador government to review disputes over fishermen's eligibility or validity of licensing documents. A Fishermen Food and Allied Workers (FFAW) Union representative will be invited to participate on the Committee in an ex-officio capacity. Resolution of disputed cases will be subject to approval by representatives from both governments.

Disputes which cannot be resolved to the appellant's satisfaction may be referred to an independent advisor who will make recommendations to the federal and provincial fisheries ministers. Ministers' decisions will be final and binding on all parties.

In addition to Canada's contribution under this program and agreement, DFO also will pay the salary of a Fishermen's Advisor, under contract with FFAW, for the duration of the program.

Management of the commercial fishery

Fishermen in insular Newfoundland who retain and renew commercial salmon licences will be prohibited from salmon fishing for at least five years. At that time salmon stock recovery will be reviewed. If stocks have recovered sufficiently to permit the resumption of gillnetting, re-opening of the commercial fishery may be considered, subject to policies in place at that time.

Labrador fishermen (SFA Zones 2 and 14(B)) choosing to retain and renew commercial salmon licences will fish under reduced quotas. The quota reduction will be in the same proportion as the number of licences retired. DFO will undertake a survey of Labrador fishermen in early 1992 in order to estimate the percentage who may retire their licences. Estimated quotas will be made public, based on this percentage. DFO will further adjust quotas at the time the season opens, if the actual number of licences retired differs significantly from the estimate.

Management of the native food fishery

The licence retirement offer and all quota reductions in Zones 2 and 14(B) will be consistent with DFO and ACOA policies, undertakings and agreements with native groups. While fishermen in SFA Zone 1 are currently excluded from this offer, they will be considered following further consultations with native groups.

DFO will continue to manage the native food fishery in a manner consistent with the Sparrow decision, and will continue discussions with aboriginal peoples with respect to fishing rights and opportunities.

Management of the recreational fishery

Recreational fishermen will be required to make a reduction in effort consistent with the overall conservation and sustainable development objectives of the Recreational Fisheries Development Cooperation Agreement. DFO, in consultation with the Province of Newfoundland and Labrador, will consider specific measures on a river by river basis. These include imposing river-specific quotas; changes in the opening and closing dates for recreational fishing seasons; bag limits; "grilse-only" retention; "catch-and-release" fishing; or combinations of these measures. DFO will consult with the sportfishing sector and the Province of Newfoundland and Labrador on these measures for 1992.

ANNEX 16

COUNCIL

CNL(92)51

DECISION OF THE COUNCIL TO REQUEST SCIENTIFIC ADVICE FROM ICES

CNL(92)51

DECISION OF THE COUNCIL TO REQUEST SCIENTIFIC ADVICE FROM ICES

1. With respect to Atlantic salmon in each Commission area, where relevant:

   a. describe the events of the 1992 fisheries with respect to catches (including unreported catches), gear, effort, composition and origin of the catch (including escapees and sea-ranched fish), and rates of exploitation;
   b. describe the status of the stocks occurring in the Commission area, and where possible evaluate escapement against targets.
   c. evaluate causes of the apparent reduced survival of salmon in recent years;
   d. evaluate the by-catch and mortality of salmon in non-salmon directed fisheries.
   e. specify data deficiencies and research needs.

2. Evaluate the following management measures on the stocks and fisheries occurring in the respective Commission areas:

   a. quota management measures and closures implemented in 1991 and 1992 in the Newfoundland and Labrador commercial salmon fisheries;
   b. regulations introduced into the Norwegian salmon fisheries in 1989;
   c. evaluate the effects of cessation of fishing activity at Faroes.

3. With respect to the fishery in the West Greenland Commission area:

   a. describe which stocks make the greatest numerical contributions of salmon to the fishery and which stocks are most heavily exploited in the fishery;
   b. describe the relative importance to stocks of regulatory measures in the fishery and in home waters;
   c. describe the relationship between the abundance of grilse and multi-sea-winter salmon in returns to homewaters and the effects of this on the management of the fishery.
   d. continue the development of a model which could be used in the setting of catch quotas in relation to stock abundance and provide worked examples with an assessment of risks relative to the management objective of achieving adequate spawning biomass.
   e. estimate the pre-fishery abundance of non-maturing 1SW salmon at the time of the fishery.

4. Review biological indicators, if any, which would make it possible to assess trends in the abundance of salmon in the North-East Atlantic.

5. With respect to the assessment of fisheries in each Commission area, evaluate the effects of the NASCO tag return incentive scheme.

6. With respect to Atlantic salmon in the NASCO area, provide a compilation of microtag, finclip, and external tag releases by ICES Member Countries in 1992.

NORTH AMERICAN COMMISSION

PAPER NAC(92)16

NASCO TAG RETURN INCENTIVE SCHEME

1992 PRIZES

The draw for the 10 winners in the North American Commission was made by the Auditor at NASCO Headquarters on 27 May 1992. At the Ninth Annual Meeting of the Commission in Edinburgh, the Chairman of the Commission, Mr David Rideout, announced the winners:

First prize - $1500 - Mr Sandy Paul, RR#3, Perth, New Brunswick, EOJ 1VO

Second prize - $1000 - Mr Albert Poole, St Lewis, Labrador, AOK 4WO

Third prize - $500 - Ms Yvonnette Lavallee, P O Box 152, St Augustine River, PQ

Fourth prizes - $100 - Mr Fred Sackett, P O Box 401, South Deer Field, Mass 01 373, USA

- Ms Eileen Emberley, Presentation Convent, Cathedral Square, St John's, Newfoundland A1C 5L4

- Mr Marvin Layden, Red Bay, Labrador, Newfoundland, AOK 4KO

- Mr Lionel Bouthot, 9 Southgate Avenue, Biddeford, ME 04005, USA

- Ms Lynda Coombs, 20 Centennial Place, Corner Brook, Newfoundland, A2H 6Y4

- Mr Kerby W Hubley, RR#2, Barss Corner, Lunenburg County, Nova Scotia, BOR 1AO

- Mr Keith Woolaver, 111 New Maryland Hwy, New Maryland, New Brunswick, E3C 1H6

The Commission offers its congratulations to the winners.

ANNEX 18

LIST OF NORTH AMERICAN COMMISSION PAPERS

PAPER NO.	TITLE
NAC(92)1	Provisional Agenda
NAC(92)2	Draft Agenda
NAC(92)3	Election of Officers
NAC(92)4	Draft Report of the Ninth Annual Meeting
NAC(92)5	Salmon Fisheries on St Pierre et Miquelon
NAC(92)6	Canadian Atlantic Salmon Catches
NAC(92)7	CAFSAC Report, Definition of Conservation for Atlantic Salmon
NAC(92)8	CAFSAC Report, Quantification of Conservation for Atlantic Salmon
NAC(92)9	CAFSAC Report, Status of Atlantic Salmon Stocks in 1991
NAC(92)10	NAC Scientific Working Group on Salmonid Introductions and Transfers (Preliminary Report of Activities 1991/92)
NAC(92)11	Status of Atlantic Salmon Stocks in the United States of America in 1991
NAC(92)12	Annual Request to ICES for Scientific Advice
NAC(92)13	Canada and Newfoundland Offer $40 Million to Retire Commercial Salmon Fishing Licences
NAC(92)14	Previous Licence Retirements
NAC(92)15	Chronology of Management Measures
NAC(92)16	NASCO Tag Return Incentive Scheme, 1992 Prizes
NAC(92)17	Figures Used by the Chairman of ACFM in His Presentation to the Commission
NAC(92)18	Response from US/Canada Air Quality Committee
NAC(92)19	Draft Protocols for the Introduction and Transfer of Salmonids by NAC/NASCO Scientific Working Group on Salmonid Introductions and Transfers

NAC(92)20	1992 Atlantic Salmon Management Plan, Tabled by Canada
NAC(92)21	Questions of Interest to the North American Commission of NASCO for Inclusion in the Request to ICES for Scientific Advice
NAC(92)22	Agenda
NAC(92)23	Report of the Ninth Annual Meeting of the North American Commission
CNL(92)12	Report of the ICES Advisory Committee on Fishery Management

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.

REPORT OF THE

NINTH ANNUAL MEETING

OF THE

NORTH-EAST ATLANTIC COMMISSION

9-12 JUNE 1992
WASHINGTON DC, USA

CHAIRMAN:	MR HENRIK SCHMIEGELOW (EEC)
VICE-CHAIRMAN:	MR PEKKA NISKANEN (FINLAND)
RAPPORTEUR:	MR GEORG RIEBER-MOHN (NORWAY)
SECRETARY:	DR MALCOLM WINDSOR

NEA(92)11

CONTENTS

NEA(92)11

REPORT OF THE NINTH ANNUAL MEETING OF THE NORTH-EAST ATLANTIC COMMISSION OF THE NORTH ATLANTIC SALMON CONSERVATION ORGANIZATION 9-12 JUNE 1992, DEPARTMENT OF STATE, WASHINGTON DC, USA

1. OPENING OF THE MEETING

1.1 In the absence of the Chairman, Mr Henrik Schmiegelow (EEC), the Ninth Annual Meeting of the North-East Atlantic Commission was opened by the Vice-Chairman, Mr Pekka Niskanen, who welcomed delegates to Washington DC.

1.2 A list of participants is given in Annex 1.

2. ADOPTION OF THE AGENDA

2.1 The Commission adopted its agenda, NEA(92)10, (Annex 2).

3. ELECTION OF OFFICERS

3.1 The Commission re-elected Mr Henrik Schmiegelow (EEC) as its Chairman.

3.2 The Commission re-elected Mr Pekka Niskanen (Finland) as its Vice-Chairman.

4. NOMINATION OF A RAPPORTEUR

4.1 The Commission nominated Mr Georg Rieber-Mohn (Norway) as Rapporteur for the meeting.

5. REVIEW OF THE 1991 FISHERY

5.1 The Commission reviewed the 1991 fishery in the Faroe Islands which had been described in detail in the ACFM report from ICES. The catch in 1991 amounted to 95 tonnes, including 13 tonnes caught in December 1991 by a research vessel. The representative of Denmark (in respect of the Faroe Islands and Greenland) reported that during 1991 the Faroese government approved an agreement between the Faroese salmon fishing licence holders and private individuals to receive compensation for quotas agreed within NASCO. He referred to the need to include a footnote in the reported catch statistics to indicate those years in which compensation agreements had been in operation and had therefore affected the catch.

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

6.1 The Chairman of the ACFM, Dr Fredric Serchuk, presented the scientific advice from ICES relevant to the North-East Atlantic Commission, CNL(92)12, (Annex 3) prepared in response to a request from the Commission at its Eighth Annual Meeting.

6.2 The representative of Denmark (in respect of the Faroe Islands and Greenland) referred to the lack of information in the ACFM report concerning the status of stocks in the North-East Atlantic Commission area. This information had been requested by the Commission in its request to ICES for scientific advice. He expressed disappointment at the limited amount of information presented concerning assessment of the effects of the management measures taken by Norway. The representative of ICES referred to some current initiatives concerning the analysis of information on stock size which will require time but should enable a more comprehensive picture of stock status to be presented.

6.3 There was general support for the need for test fishing in Faroese waters in view of the possible impacts of the compensation arrangements on the collection of scientific data on the marine phase of salmon. The representative of the EEC referred to the need for guidance from the scientists on how such a fishery should be conducted.

7. EFFECT OF ESCAPEES OF FARMED SALMON ON SALMON STOCKS

7.1 The representative of Finland expressed concern at the continuing Norwegian fish farming activity in the Tana Fjord, and requested that such activity be stopped in order to avoid harmful disease and genetic effects on the wild stocks. The representative of Norway referred to a decision of the Ministry of the Environment to permit the fish farms to continue their operations but under very restrictive conditions, now under preparation, intended to safeguard the important populations of salmon in the Tana river.

7.2 The representative of Iceland referred to the fact that while salmon farming had declined in Iceland, sea-ranching of salmon had greatly increased and ranched fish are now occurring in streams containing wild stocks and may be having an adverse effect.

8. IMPACTS OF ACID RAIN ON ATLANTIC SALMON

8.1 The representative of Sweden described the liming operations which have been carried out in Swedish west coast rivers. There are 13 rivers containing naturally reproducing salmon stocks which have been designated National Interest Areas, and all of these have received applications of lime both to the watercourse and to the catchment. Such liming has been of benefit not just to the salmon but to the whole aquatic ecosystem. Between 1977-1981 an experimental liming programme was conducted in Sweden, the results of which will be published next year. He also referred to a recently announced six year liming programme which will be conducted between 1992-1998 at a cost of $18 million.

8.2 The Commission agreed that in future questions such as Effects of Escapees of Farmed Salmon and Impacts of Acid Rain should be considered under a broader agenda item dealing with the environmental quality of salmon rivers in accordance with Article 9(c) of the Convention.

9. REGULATORY MEASURES

9.1 The representative of the EEC explained that the Community's position concerning the need for a regulatory measure had not changed since the previous year. However,

in view of the indications that the marine mortality of salmon had been high and stock levels low there was a need to take a precautionary approach and reduce the quota for the Faroese fishery.

9.2 The representative of Norway referred to the large contribution of Norwegian salmon to the catch at Faroes and to the reduced catch and stock of salmon in Norwegian homewaters. Recent management measures in Norway have resulted in reduced fishing effort both in the sea-fishery and in freshwater and fishing has been banned in 80 rivers. While there was no scientific proof of a decline in stocks in the marine envrionment the available information suggests that abundance is low and Norway would, therefore, adopt a precautionary approach and seek a reduction in the quota for the Faroese fishery.

9.3 The representative of Denmark (in respect of the Faroe Islands and Greenland) commented that the general message from the ACFM report was that little had changed from the previous year. He accepted that if there was robust scientific evidence of a decline in stocks then the Faroese quota might also need to be reduced. He also referred to the low levels of exploitation rates in the Faroese fishery for Norwegian (Imsa) and Scottish (North Esk) salmon stocks compared to the levels in homewaters. He suggested that if management measures were needed to safeguard spawning escapements they should be concentrated in homewaters. He added that the Faroese quota had been consistently reduced to a level of about half the catch before quota agreements were introduced without a scientific basis for such a reduction. He would therefore find it difficult to accept a further reduction in the quota without strong scientific evidence to support it.

9.4 The Commission considered a proposal from the Chair for a continuation of the existing regulatory measure for the Faroese zone for 1993, NEA(92)9, (Annex 4).

9.5 The representative of the EEC referred to the indication that stocks in the Commission area were at a low level and that it would not be possible for the Community to support the proposal.

9.6 The Commission adopted this proposal as a regulatory measure.

10. FISHING FOR SALMON IN INTERNATIONAL WATERS BY NON-CONTRACTING PARTIES

10.1 The Chairman referred to the deliberations within the Council on this issue.

11. RECOMMENDATIONS TO THE COUNCIL ON SCIENTIFIC RESEARCH

11.1 The Commission appointed Mr Kjartan Hoydal (Denmark in respect of the Faroe Islands and Greenland) and Dr Lars Petter Hansen (Norway) to represent the Commission on the Scientific Committee.

11.2 The Commission reviewed document NEA(92)8, and agreed to recommend it to the Council as part of the annual request for scientific advice to ICES. The recommendations from the Commission were considered and modified slightly by the

Council. The request to ICES for scientific advice agreed by the Council, CNL(92)51, is contained in Annex 5.

12. REPORT ON NASCO TAG RETURN INCENTIVE SCHEME AND ANNOUNCEMENT OF AWARDS

12.1 The Chairman announced that the draw for the prizes in the Tag Return Incentive Scheme was made by the Auditor at NASCO Headquarters on 27 May 1992. The winner of the first prize was Matti Kilpinen, Gothenburg, Sweden. A list of all prize winners was presented to the Commission, NEA(92)6, (Annex 6). The Commission offered its congratulations to all of the winners.

13. OTHER BUSINESS

13.1 The representative of Denmark (in respect of the Faroe Islands and Greenland) described the background to the agreement between the Faroe Islands salmon fishery licensees and the Committee offering compensation arrangements to Faroese licensees. The representative of Sweden asked about the arrangements for research. The representative of Denmark (in respect of the Faroe Islands and Greenland) described provisional arrangements for the data series to continue.

14. DATE AND PLACE OF NEXT MEETING

14.1 The Commission agreed to hold its next meeting during the Tenth Annual Meeting of the Council, 7-11 June 1993, in Edinburgh.

15. CONSIDERATION OF THE DRAFT REPORT OF THE MEETING

15.1 The Commission agreed the draft report of the meeting, NEA(92)5.

ANNEX 1

NORTH ATLANTIC SALMON CONSERVATION ORGANIZATION
NINTH ANNUAL MEETING OF THE NORTH-EAST ATLANTIC COMMISSION
9-12 JUNE 1992, DEPARTMENT OF STATE, WASHINGTON DC, USA

LIST OF PARTICIPANTS

* Denotes Head of Delegation

MEMBERS OF THE COMMISSION

DENMARK (IN RESPECT OF THE FAROE ISLANDS AND GREENLAND)

MR KJARTAN HOYDAL	Representative Faroese Home Government, Torshavn, Faroe Islands
MR SOFUS POULSEN	Faroese Commercial Attaché, Aberdeen

EEC

*MR HARRY KOSTER	Representative Directorate-General of Fisheries, EC Commission, Brussels
MR ALEXANDRE FERNANDES	Embassy of Portugal, Washington DC
MR LUIS TEIXEIRA DA COSTA	Secretariat of the Council of the European Communities, Brussels
MR JOHN CARBERY	Legal Advisor, Secretariat of the Council of the European Communities, Brussels
MR DAVID DUNKLEY	Scottish Office Agriculture and Fisheries Department, Montrose
MRS PAM JARVIS	Ministry of Agriculture and Fisheries, London
MR JOHN KEOHANE	Department of the Marine, Dublin
MR ADRIAN MCDAID	Permanent Representation of Ireland to the EC, Brussels
DR KEVIN O'GRADY	National Rivers Authority, Bristol
MR TED POTTER	Ministry of Agriculture, Fisheries and Food, Lowestoft

MR WOLFGANG THOMAS	Bundesministerium fur Ernährung, Landwirtschaft und Forsten, Bonn
MR BOB WILLIAMSON	Scottish Office Agriculture and Fisheries Department, Edinburgh

FINLAND

*MR PEKKA NISKANEN	Representative Ministry of Agriculture and Forestry, Helsinki
MR EERO NIEMELA	Representative Finnish Game and Fisheries Institute, Helsinki

ICELAND

*MR HELGI AGUSTSSON	Representative Icelandic Ambassador to the United Kingdom, London
MR ARNI ISAKSSON	Representative Institute of Freshwater Fisheries, Reykjavik
MR ORRI VIGFUSSON	Association of Icelandic Fishing Clubs, Reykjavik

NORWAY

*MR BØRRE PETTERSEN	Representative Ministry of the Environment, Oslo
MR SVEIN MEHLI	Representative Directorate for Nature Management, Trondheim
MS INGER LAVIK OPDAHL	Representative Royal Ministry of Foreign Affairs, Oslo
DR LARS PETTER HANSEN	Norwegian Institute for Nature Research, Trondheim
MR STEINAR HERMANSEN	Ministry of the Environment, Oslo
MR TORMOD KARLSTROEM	Ministry of the Environment, Oslo
MR BIRGER LARSEN	Royal Norwegian Embassy, Washington DC
MR GEORG RIEBER-MOHN	Regional Board of Salmon Fishery, Oslo

RUSSIAN FEDERATION

*MR ALEXANDER V RODIN	Representative PINRO, Murmansk
MR GUENRIKH BOROVKOV	Representative Ministry of Fisheries, Moscow
MR YURIY N BOVYKIN	Embassy of the Russian Federation, Washington DC
MR VICTOR SOLODOVNIK	Embassy of the Russian Federation, Washington DC

SWEDEN

*MR GUNNAR HOERSTADIUS	Representative Ministry of Agriculture, Stockholm
DR INGEMAR OLSSON	Representative National Board of Fisheries, Göteborg

OBSERVERS - PARTIES

CANADA

MR KEN JONES	Department of Fisheries and Oceans, Ottawa, Ontario

USA

DR JENNIFER BAILEY	National Marine Fisheries Service, Maryland

ICES

DR EMORY ANDERSON	International Council for the Exploration of the Sea, Copenhagen
DR RICHARD GRAINGER	International Council for the Exploration of the Sea, Copenhagen
DR FREDRIC SERCHUK	National Marine Fisheries Service, Woods Hole, Massachusetts

SECRETARIAT

DR MALCOLM WINDSOR	Secretary
DR PETER HUTCHINSON	Assistant Secretary

ANNEX 2

NEA(92)10
NINTH ANNUAL MEETING OF THE NORTH-EAST ATLANTIC COMMISSION
9-12 JUNE 1992
DEPARTMENT OF STATE, WASHINGTON DC, USA

AGENDA

1. Opening of the Meeting
2. Adoption of the Agenda
3. Election of Officers
4. Nomination of a Rapporteur
5. Review of the 1991 Fishery
6. ACFM Report from ICES on Salmon Stocks in the Commission Area
7. Effect of Escapees of Farmed Salmon on Salmon Stocks
8. Impacts of Acid Rain on Atlantic Salmon
9. Regulatory Measures
10. Fishing for Salmon in International Waters by Non-Contracting Parties
11. Recommendations to the Council on Scientific Research
12. Report on NASCO Tag Return Incentive Scheme and Announcement of Awards
13. Other Business
14. Date and Place of Next Meeting
15. Consideration of the Draft Report of the Meeting

ANNEX 3

COUNCIL

CNL(92)12

REPORT OF THE ICES ADVISORY COMMITTEE ON FISHERY MANAGEMENT (SECTION 2)

2. INFORMATION OF INTEREST TO THE NORTH-EAST ATLANTIC COMMISSION

2.1 Description of the Fisheries at Faroes

2.1.1 Gear and effort

The gear used in the Faroes fishery is long lines. In recent years, the effort in the salmon fishery has continued to decline, and in the 1990/91 season only 8 out of 13 licences were used. The maximum permitted number of licences is 26.

2.1.2 Catches and discards

The total nominal catch in the Faroes fishery in the 1990/91 season was 202 t. The catch for the calendar year 1991 was only 95 t. This included 13 t caught in December 1991 by a research vessel operating in the Faroes area during the 1991/92 season.

Catch (t)

Year	Catch	Season	Catch
1986	530	1985/86	545
1987	576	1986/87	539
1988	243	1987/88	208
1989	364	1988/89	309
1990	315	1989/90	364
1991	95	1990/91	202

No data are available on the numbers of farmed fish taken in the fishery because appropriate data (e.g. fin measurements or sufficient scale samples) were not collected in the market sampling programme.

Three samples of discards were collected during the fishing season and discard rates ranges from 9.9 to 16.1%; the overall estimate was 14.8%.

2.1.3 Catch per unit effort

The catch in number per 1,000 hooks (CPUE) by statistical rectangle for the whole season is shown in Figure 4. The CPUE values for November and December were among the highest recorded at this time of year since 1981/82. However, the CPUE fell markedly in February and remained fairly low for the rest of the season.

2.1.4 Biological composition of the catch

In the 1990/91 season, practically all the catch consisted of 2SW fish (91%), with only 1% of 1SW fish and 8% of 3SW fish. These values lie within the ranges observed in previous seasons.

No smolt age composition of the Faroes catch was obtained in the 1990/91 season.

2.1.5 Origin of the catch

Microtagged salmon from the Faroe Islands (2), Iceland (1), Ireland (3), England and Wales (5), Northern Ireland (1) and Scotland (2) were recovered during the 1990/91 season.

A total of 135 external tags was recovered in the Faroes fishery in 1990/91 of which 116 were from Norway, 16 were from Sweden, and 3 were from Scotland.

2.1.6 Exploitation rates in the Faroes fishery

The exploitation of hatchery stocks from the Rivers Drammen (Norway) and Lagan (Sweden) have shown similar changes with levels being quite low in the 1986/87 and 1987/88 seasons but higher in 1985/86 and in the two most recent seasons. The two Norwegian hatchery stocks (Drammen and Imsa) showed opposite trends, with the exploitation rate on the Drammen stock falling in 1990/91 after a 2-year peak while that on the Imsa stock rose after a 3-year trough. The exploitation rates on wild fish from the Imsa and North Esk Rivers have been very much lower in the past 5 years than previously, although there was a slight rise for 2SW fish in 1990/91. There is no clear relationship between the trends for individual stocks and the catches recorded in the fishery.

Exploitation

Season	86/87	87/88	88/89	89/90	90/91
Drammen	3	6	36	45	24
Imsa (W)	13	5	3	5	13
Imsa (H)	28	21	10	15	40
N. Esk	6	0	0	0	5
Lagan	0	9	13	21	20

2.2 Description of Homewater Fisheries

2.2.1 Gear and effort

No changes in the regulations affecting salmon fishing gear in 1991 were reported for any countries except Norway and Scotland. In Norway, the use of monofilament nets

was banned for catching anadromous salmonids. In Scotland there were changes in the regulations affecting gear or fishing period for rod and line fisheries in four rivers.

Fishing effort was thought to have been reduced in France, Ireland, UK (Northern Ireland), UK (England and Wales), UK (Scotland), Russia and Sweden. Factors affecting this reduction are thought to have included perceived reductions in stock abundance and weather conditions (e.g. early freezing in Russia and low river flows in most other countries).

2.2.2 Origin of the catch

Table 3 indicates the origin of the salmon catches in each country based upon recoveries of tags over a number of years. Double crosses indicate the principal component of the catch and single crosses other significant contributions. Rare recoveries of one country's tags in another country are indicated by dots. These were assumed to indicate very minor contributions to catches. It is apparent that there is normally a pattern of interchange between neighbouring countries, although this exchange may not always be even. It must be noted that this table reflects the relative size of national stocks.

The table below shows estimated contributions of ranched and farmed fish to national catches. In this context, ranching is defined as the release into the wild of reared smolts with the intention of attempting to harvest all returning adults. Releases of reared fish to enhance wild stocks or compensate for lost wild production are, therefore, ignored.

Estimated catches (in tonnes round fresh weight) of wild, farmed and ranched salmon in homewater fisheries in 1991

Country	Catches of salmon			
	Wild	Farmed	Ranched	Total
Finland	68	<1	0	69
France	>12	0	<1	13
Iceland	122	3	394	519
Ireland	<422	+	0	422
Norway	692	26[1]		885
Norway		167[2]		
Russia	215	0	0	215
Sweden	23	1	1+a	38
UK (E+W)	199	0	0	199
UK (N.Ireland)	54	<1	0	55
UK (Scotland)	384	12	0	396

[1] (FW)
[2] (Sea)

The only country in the North-East Atlantic Commission Area known to be ranching in this way is Iceland, where ranched fish comprised 76% of the catch in 1991. However, in France there is a small experimental ranching exercise. In addition, 14 t of the catch in Sweden comprised fish that have been released for mitigation purposes, but these fish are not expected to contribute to wild spawning populations.

The only countries in which farmed fish are thought to make a significant contribution to fisheries are Norway and UK (Scotland). In Norway, where extensive surveys have been undertaken since 1988, farmed fish appear in both marine and freshwater fisheries. Estimates of the proportion of farmed fish in various Norwegian fisheries were highly variable between sites but indicate that the proportion of farmed salmon was much lower in samples taken in fresh water than in coastal areas. The proportion of farmed fish in the catch seems to have been relatively constant in the period 1989-91.

In UK (Scotland), sampling in 1990 indicated that most of the reared fish caught in fisheries had escaped or been lost from sea cages. In 1991, however, sampling on the west coast revealed that most of the farm origin fish were derived from losses or releases of smolts or parr. On the east coast, where the incidence of farm escapees was low, most of the farm-origin fish were adult escapees.

In all other countries, farmed fish are thought to form only a very minor (or negligible) part of the catch.

2.2.3 Exploitation rates

Exploitation on the River Drammen and Lagan stocks (hatchery reared fish) was higher than average in 1991 while the rates for the North Esk (UK (Scotland)) and Imsa (Norway), and for hatchery reared fish on the River Bush (UK (Northern Ireland)), were lower. For most other stocks (including wild fish from the River Bush) rates were similar to those estimated for 1990. On the Russian rivers fishing traps are operated every day and the exploitation rates are adjusted by altering the proportion of days on which the catch is released or killed. Exploitation rates were reduced in 1991 to protect spawning stocks.

Preliminary 1991 exploitation (average)

Location (River, H/W)	1SW	2SW	All ages
Iceland (Ellidar, W)	37(39)		
Ireland (Burrishoole, H)	65(74)		
Norway (Drammen, H)	64(57)	70(53)	
Norway (Imsa, W)	41(62)	74(77)	
Norway (Imsa, H)	54(67)	69(83)	
Russia (Ponoy, W)			20(53)
Russia (Kola, W)			58(80)
Sweden (Lagan, H)	90(82)	92(81)	
UK, E&W (Itchen, net)			-
UK, E&W (Itchen, rod)			-
UK, E & W (Test, rod)			26(30)
UK, N. Ireland (Bush, W)	65(70)	43(45)	
UK, N. Ireland (Bush, H)	57(79)	46(68)	
UK, Scotland (N. Esk)	10(28)	15(31)	

2.2.4 Effects of recent management measures in Norway

Catches in Norwegian homewaters during 1986-1991 are shown below:

Catch (t)

	1986	1987	1988	1989	1990	1991
Drift	795	552	527	0	0	0
Other	497	461	314	488	514	471
Freshwater	306	372	235	417	416	414
Proportion in freshwater	.19	.27	.22	.46	.45	.47

It is likely that the ban on drift netting in 1989 has resulted in a larger number of salmon being available to the other marine homewater fisheries. The additional regulation of these fisheries has probably resulted in a substantial increase in freshwater escapement as suggested by increased catches in freshwater. In 1989, 1990 and 1991, freshwater catch accounted for 46, 45 and 47% of total nominal catches, respectively, compared to 18 to 27% over the years 1982 to 1988. Increased freshwater escapement is also suggested by the reduction in marine exploitation rates on most components of the River Imsa salmon stock. This was not the case for salmon of the River Drammen stock, however, because drift net exploitation on this stock has always been low.

The salmon fishery on the west coast of Norway intercepts stocks from the USSR, Finland and the Swedish west coast on their return to their home rivers. Exploitation on 1SW fish tagged as smolts on the River Lagan (Sweden) was lower in 1989, 1990 and 1991 (average 1%) than in 1985-88 (average 7%). This suggests that the management measures introduced in Norway in 1989 also affected Swedish west coast stocks.

The frequency of net-marked salmon entering a river may also give information about changes in netting effort on the migration route. The proportion of net-marked salmon recorded in samples of river fisheries in 1991 was much lower than the unweighted means during the period 1978-88. The reduced proportion of net-marked fish may be accounted for by the management measures introduced in the Norwegian homewater fishery in 1989.

2.2.5 By-catches of fish, birds and mammals in drift net fisheries

Drift net fisheries, targeting Atlantic salmon and migratory trout (*Salmo trutta*), are currently operated by six countries in the NEAC area: France, Finland, Ireland Norway, (UK (England and Wales) and UK (Northern Ireland)). A variety of species are taken as by-catch in these fisheries; the details of these by-catches are listed by nation in the Report of the Working Group (Anon, 1992).

REFERENCES

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Anon, 1984. Report of Meeting of the Working Group on North Atlantic Salmon. Aberdeen, 20 April - 4 May 1984. ICES, Doc. C.M. 1984/Assess:16.

Anon, 1982. Report of the Working Group on North Atlantic Salmon. Dublin, 5-12 March 1992. ICES, Doc C.M. 1992/Assess:15.

Table 3. Origin of catches of salmon in homewater fisheries.

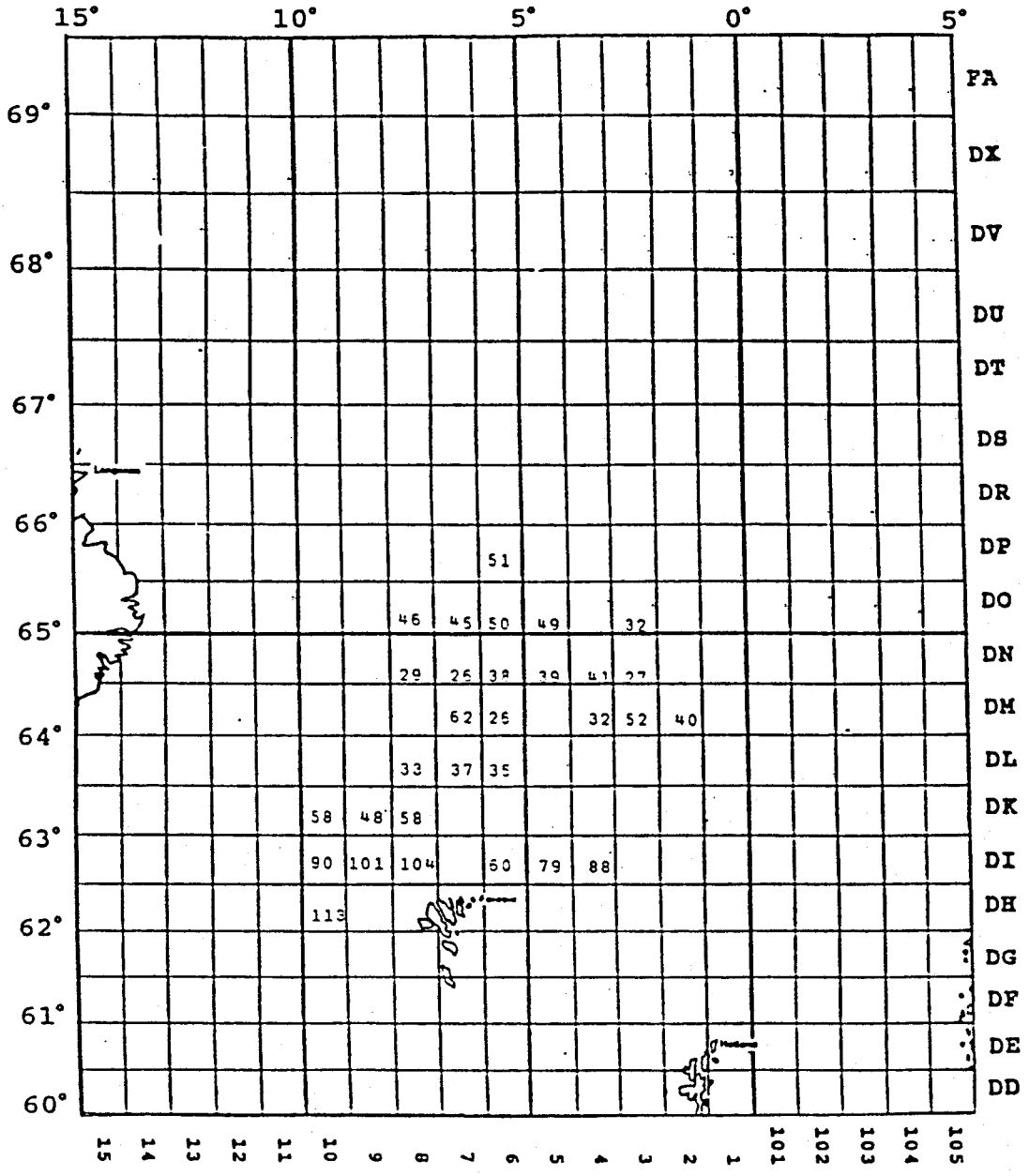
++ = principal component of the catch

+ = other significant contributions

- = occurence

	Catch in Country									
Origin of Catch	Rus	Fin	Nor	Swe	Fr	UK E&W	UK Scot	UK NI	Ire	Ice
Russia	++	-	+							
Finland		++	+							
Norway		+	++	+		-	-		-	
Sweden			+	++						
France					++					
UK (E&W)			-	-	-	++	+	+	+	
UK (Scot)						+	++	+	+	
UK (NI)						-	+	++	+	
Ireland			-	-	-	-	+	+	++	
Iceland			-							++

Figure 4. Catch per unit effort (1000 hooks) of salmon by statistical rectangle from logbooks in the 1990/1991 season.



ANNEX 4

NORTH-EAST ATLANTIC COMMISSION

NEA(92)9

PROPOSAL BY THE CHAIR FOR A REGULATORY MEASURE FOR FISHING OF SALMON IN THE FAROE ISLANDS FOR THE CALENDAR YEAR 1993

The North-East Atlantic Commission of the North Atlantic Salmon Conservation Organization

having regard to Article 8, subparagraph (b), recognising the need for regulatory measures in the Faroese fishery for the year 1993 decides that:

The Faroese catch shall be controlled in accordance with an effort limitation programme, set out in Appendix 1, for a period of one year.

The total nominal catch for the duration of the period shall not exceed 550 tonnes.

Appendix 1

The following regulatory measures for the fishing of salmon in the fisheries zone of the Faroe Islands for the year 1993 shall apply:

(1) Areas with salmon below the length of 60cm will be closed for salmon fishery at short notice, following the general rules for closing areas with undersized fish already in force in the Faroese fisheries zone;
(2) The number of boats licensed for salmon shall not exceed 15;
(3) The salmon fishing season will be limited to 150 days between 1 January and 15 April and 1 November and 31 December. The Faroese Authorities shall inform NASCO before 15 December 1992 of the fishing season for 1993;
(4) Subject to the maximum annual catch the total allowable number of fishing days for the salmon fishery in the Faroe Islands zone shall be set at 1200.

ANNEX 5

COUNCIL

CNL(92)51

DECISION OF THE COUNCIL TO REQUEST SCIENTIFIC ADVICE FROM ICES

CNL(92)51

DECISION OF THE COUNCIL TO REQUEST SCIENTIFIC ADVICE FROM ICES

1. With respect to Atlantic salmon in each Commission area, where relevant:

   a. describe the events of the 1992 fisheries with respect to catches (including unreported catches), gear, effort, composition and origin of the catch (including escapees and sea-ranched fish), and rates of exploitation;
   b. describe the status of the stocks occurring in the Commission area, and where possible evaluate escapement against targets.
   c. evaluate causes of the apparent reduced survival of salmon in recent years;
   d. evaluate the by-catch and mortality of salmon in non-salmon directed fisheries.
   e. specify data deficiencies and research needs.

2. Evaluate the following management measures on the stocks and fisheries occurring in the respective Commission areas:

   a. quota management measures and closures implemented in 1991 and 1992 in the Newfoundland and Labrador commercial salmon fisheries;
   b. regulations introduced into the Norwegian salmon fisheries in 1989;
   c. evaluate the effects of cessation of fishing activity at Faroes.

3. With respect to the fishery in the West Greenland Commission area:

   a. describe which stocks make the greatest numerical contributions of salmon to the fishery and which stocks are most heavily exploited in the fishery;
   b. describe the relative importance to stocks of regulatory measures in the fishery and in home waters;
   c. describe the relationship between the abundance of grilse and multi-sea-winter salmon in returns to homewaters and the effects of this on the management of the fishery.
   d. continue the development of a model which could be used in the setting of catch quotas in relation to stock abundance and provide worked examples with an assessment of risks relative to the management objective of achieving adequate spawning biomass.
   e. estimate the pre-fishery abundance of non-maturing 1SW salmon at the time of the fishery.

4. Review biological indicators, if any, which would make it possible to assess trends in the abundance of salmon in the North-East Atlantic.

5. With respect to the assessment of fisheries in each Commission area, evaluate the effects of the NASCO tag return incentive scheme.

6. With respect to Atlantic salmon in the NASCO area, provide a compilation of microtag, finclip, and external tag releases by ICES Member Countries in 1992.

ANNEX 6

NORTH-EAST ATLANTIC COMMISSION

PAPER NEA(92)6

NASCO TAG RETURN INCENTIVE SCHEME

1992 PRIZES

The draw for the 10 winners in the North-East Atlantic Commission was made by the Auditor at NASCO Headquarters on 27 May 1992. At the Ninth Annual Meeting of the Commission in Edinburgh, the Vice-Chairman of the Commission, Mr Pekka Niskanen, announced the winners:

First prize - $1500 - Matti Kilpinen, Björnekärrsgaten 4A, 41504 Göteburg, Sweden

Second prize - $1000 - M Droganov, Komsomolskaya Street 2, Murmanrybvod, Murmansk, Russia

Third prize - $500 - Tony Randles, 30 Allington Place, Handbridge, Chester, UK

Fourth prizes - $100 - Tom Dalgarno, Rockhall Fishing Station, St Cyrus, Montrose, UK

- Helgi Simonsen, Gardaveg 43, Klaksvik, Faroe Islands

- Stig Nilsson, Södra vägen 22, 302 42 Halmstad, Sweden

- G R Holland, Delsassio, Dock Road, Connahs Quay, Deeside, Clwyd, Wales CH5 4DS, UK

- Mr H Moir, The Moorings, Cowie, Stonehaven, UK

- Hans Pauli Purkhus, Jorundgota 14, Klaksvik, Faroe Islands

- Jerry Preütz, Vivebäcksvägen 11, 263 71 Jonstorp, Sweden

The Commission offers its congratulations to the winners.

ANNEX 7

LIST OF NORTH-EAST ATLANTIC COMMISSION PAPERS

PAPER NO.	TITLE
NEA(92)1	Provisional Agenda
NEA(92)2	Draft Agenda
NEA(92)3	Election of Officers
NEA(92)4	Not Issued
NEA(92)5	Draft Report of the Ninth Annual Meeting
NEA(92)6	NASCO Tag Return Incentive Scheme, 1992 Prizes
NEA(92)7	Figures Used by the Chairman of ACFM in His Presentation to the Commission
NEA(92)8	Questions of Interest to the North-East Atlantic Commission of NASCO for Inclusion in the Request to ICES for Scientific Advice
NEA(92)9	Proposal by the Chair for a Regulatory Measure for Fishing of Salmon in the Faroe Islands for the Calendar Year 1993
NEA(92)10	Agenda
NEA(92)11	Report of the Ninth Annual Meeting of the North-East Atlantic Commission
CNL(92)12	Report of the ICES Advisory Committee on Fishery Management

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.

REPORT OF THE

NINTH ANNUAL MEETING

OF THE

WEST GREENLAND COMMISSION

9-12 JUNE 1992
WASHINGTON DC, USA

CHAIRMAN:	DR WILFRED M CARTER (CANADA)
VICE-CHAIRMAN:	MR GILBERT RADONSKI (USA)
RAPPORTEUR:	DR JENNIFER BAILEY (USA)
SECRETARY:	DR MALCOLM WINDSOR

WGC(92)11

CONTENTS

WGC(92)11

REPORT OF THE NINTH ANNUAL MEETING OF THE WEST GREENLAND COMMISSION OF THE NORTH ATLANTIC SALMON CONSERVATION ORGANIZATION 9-12 JUNE 1992, DEPARTMENT OF STATE, WASHINGTON DC, USA

1. OPENING OF THE MEETING

1.1 The Ninth Annual Meeting of the West Greenland Commission was opened by the Chairman, Dr Wilfred Carter (Canada), who welcomed delegates to Washington DC.

1.2 A list of participants is given in Annex 1.

2. ADOPTION OF THE AGENDA

2.1 The Commission adopted its agenda, WGC(92)10, (Annex 2).

3. ELECTION OF OFFICERS

3.1 The Commission elected Mr David Egan (United States) as its Chairman.

3.2 The Commission elected Mr Henrik Schmiegelow (EEC) as its Vice-Chairman.

4. NOMINATION OF A RAPPORTEUR

4.1 The Commission nominated Dr Jennifer Bailey (USA) as Rapporteur for the meeting.

5. REVIEW OF THE 1991 FISHERY AND ACFM REPORT FROM ICES ON SALMON STOCKS IN THE COMMISSION AREA

5.1 The Chairman of the ACFM, Dr Fredric Serchuk, presented the scientific advice from ICES relevant to the West Greenland Commission, CNL(92)12, (Annex 3) prepared in response to a request from the Commission at its Eighth Annual Meeting.

5.2 In 1991, the fishery at West Greenland (NAFO sub-area 1) opened on 5 August and ended in November, although the official closing date was 31 December. The total nominal catch was 437t, which is 210t more than in 1990, when the total landings were 227t. The TAC for 1991 was set unilaterally at 840t. Approximately 80% of the total landings were taken by boats smaller than 30 feet. The two methods of classifying the origin of the catch at West Greenland yielded estimates that 63% or 65% was of North American origin and a corresponding 37% or 35% was of European origin.

5.3 The ICES report presented a continental run-reconstruction model to estimate the abundance of North American salmon at West Greenland. The model considers the impact of Canadian fisheries on non-maturing and maturing fish and the fishery on non-maturing stocks at West Greenland. This model indicates a marked decline in the total estimated abundance of all non-maturing 1SW salmon of North American origin

since 1986, and is considered representative of the trend for the entire extant stock. ICES estimates of 1990 pre-fishing abundance range from a maximum of 309,436 fish to a minimum of 216,965 fish, with a mean of 263,200 fish.

5.4 The representative of the EEC noted that the figures for pre-fishery abundance presented by ICES are based on a model which reconstructs the previous year's run and expressed the need for a predictive model for management. The representative of ICES accepted the usefulness of a predictive model and observed that two indicators look promising for such a model:

i) traps for small salmon on the Miramichi River; and
ii) the catch taken in the first two weeks of the West Greenland fishery.

In the case of the Miramichi traps, the count would have to be taken as early before the fishery as possible but a precise time could not yet be specified.

5.5 In response to a question from the representative of the EEC as to what an appropriate harvest at West Greenland might be, the representative of ICES reviewed the figure found on page 16 of WGC(92)6, noting that fisheries on maturing and non-maturing 1SW fish and the fishery on non-maturing 1SW fish at West Greenland all affect spawning escapement. A variety of combinations of catches might meet the reasonable Canadian management goal of a spawning escapement of 175,000 fish. The spawning escapement target of 175,000 fish is a composite of all stocks.

5.6 The representative of Denmark (in respect of the Faroe Islands and Greenland) stated that not all rivers contribute to the West Greenland fishery and that stocks in rivers not contributing to it are not relevant to the discussion. The Restigouche, Miramichi, and Saint John Rivers are the major contributors. One of these rivers had exceeded its spawning escapement target for 1991 and the other two were only slightly under target. The representative of ICES said he could not state the contribution of each river to the fishery at this time. The representatives of Canada and the United States noted the importance of the contribution of other rivers to the fishery at West Greenland.

5.7 The representative of ICES stated that ICES had been asked to develop models linking spawning escapement to catch options. Based on their best information, a risk averse position might be to assume a pre-fishery abundance of 200,000 to 250,000 fish for 1992, assuming a higher level might likely result in a failure to obtain egg deposition goals. ICES could not recommend a quota figure, however, because the West Greenland Commission has not agreed to management goals. It is for the Commission to decide management questions. ICES develops the methods the Commission can use in making such decisions.

5.8 The representative of ICES stated that the spawning escapement target of 175,000 fish that had formed the basis of the Commission's discussion was formulated on the basis of scientific analysis, and he had no reason to doubt its appropriateness. Assuming a pre-fishery abundance of 200,000 fish and a spawning escapement target of 175,000 fish, there could be no fishery on maturing or non-maturing fish in Canada and Greenland.

6. REGULATORY MEASURES

6.1 The representative of Denmark (in respect of the Faroe Islands and Greenland) stated that since the beginning of NASCO the quota has only been decreased, even when scientific reasons existed for an increase. Therefore he would only discuss the quota in the context in which an increase in stocks would bring an increase in the quota. The representative put forward document WGC(92)7, (Annex 4) containing principles for a model with that feature, and which builds on constructive efforts vetoed by one Party last year. The representative of Denmark (in respect of the Faroe Islands and Greenland) stated that only stocks that contribute to the fishery should be relevant to the discussion. Rivers in the US and Europe contribute but the parameters of a management model should only include significant contributing rivers.

6.2 The representative of Canada characterized the scientific assessment of the stocks by ICES as depressing and Canada's primary goal as conservation with a view to sustainable use. The representative stressed Canada's commitment to the right of aboriginal peoples to fish for food, ceremonial and social reasons, and linked Canada's sensitivity in this area to respect for the position taken by the representative of Denmark (in respect of the Faroe Islands and Greenland). The right of the Greenlanders to fish for salmon is not in question, but it is not reasonable for Greenland to take a rising proportion of declining stocks. New Canadian management measures, which apply to both commercial and recreational fisheries, will directly affect 3,000 holders of commercial licences, cost approximately C$100 million in 1992, and reduce the Canadian take by approximately 50%. A similar reduction in take on the part of Greenland would be equitable.

6.3 The representative of the United States stated that the information presented by ICES made it clear that the situation of Atlantic salmon stocks is serious. He referred to the sound and measured comments made by the representative of Denmark (on behalf of the Faroe Islands and Greenland) in 1991 that measures taken by grazing area states should be gauged by measures taken by homewater states. He hoped the Canadian measures would now serve as an example for Greenland.

6.4 The representative of the EEC noted that the scientific information from ICES indicates that the stocks are in bad condition. Canada, the EEC and the United States have all taken measures. All Parties should take steps in accordance with the Law of the Sea and NASCO Conventions. The current quota at West Greenland is too high. Inflexibility on this issue is not acceptable.

6.5 The representative of Denmark (in respect of the Faroe Islands and Greenland) observed that the information presented by ICES refers to the status of stocks in 1990. The higher catch at West Greenland in 1991 may well indicate increased returns of salmon in 1992. Lack of information on the current year class is a persistent problem for the Commission and the representative suggested the Commission find a way to make a forward, rather than a backward calculation. He also hoped the Commission could adjust the timing of ICES work in order to make management decisions in a more measured and timely fashion. The representative of the EEC supported this question as a basis of discussion in next year's Commission. The representative of Canada expressed the hope that a method of prediction could be found.

6.6 The Commission did not agree upon regulatory measures.

6.7 In view of the positions taken by the contracting Parties, the representative of the EEC expressed the Community's serious concerns at the failure to agree on regulatory measures again this year. He called on the members of the Commission to reflect on the negative effects which persistent failure to resolve the situation would have on the future of NASCO. He suggested that the Parties consider the need to confer before the next Annual Meeting in order to avoid a renewed failure next year.

6.8 The representative from Denmark (in respect of the Faroe Islands and Greenland) said that his delegation would reflect on the discussion held in Washington. He re-stated the position of Denmark (in respect of the Faroe Islands and Greenland) that a reduction in the Greenland quota only take place on the introduction of the principle that the quota can go up as well as down.

7. RECOMMENDATIONS TO THE COUNCIL ON SCIENTIFIC RESEARCH

7.1 The Commission appointed Mr Jens Moeller Jensen (Denmark in respect of the Faroe Islands and Greenland) and Mr Ted Potter (EEC) to represent the Commission on the provisional Scientific Committee.

7.2 The Commission reviewed document WGC(92)8, and agreed to recommend it to the Council as part of the annual request for scientific advice to ICES. The recommendations from the Commission were considered and modified slightly by the Council. The request to ICES for scientific advice agreed by the Council, CNL(92)51, is contained in Annex 5.

8. REPORT ON NASCO TAG RETURN INCENTIVE SCHEME AND ANNOUNCEMENT OF AWARDS

8.1 The Chairman announced that the draw for the prizes in the Tag Return Incentive Scheme was made by the Auditor at NASCO Headquarters on 27 May 1992. The winner of the first prize was Jens Kristiansen, 3912 Napassoq, Greenland. A list of all prize winners was presented to the Commission, WGC(92)5, (Annex 6). The Commission offered its congratulations to all prize winners.

9. OTHER BUSINESS

There was no other business.

10. DATE AND PLACE OF NEXT MEETING

10.1 The Commission agreed to hold its next meeting during the Tenth Annual Meeting of the Council, 7-11 June 1993, in Edinburgh.

11. CONSIDERATION OF THE DRAFT REPORT OF THE MEETING

11.1 The Commission agreed the draft report of the meeting, WGC(92)4.

ANNEX 1

NORTH ATLANTIC SALMON CONSERVATION ORGANIZATION
NINTH ANNUAL MEETING OF THE WEST GREENLAND COMMISSION
9-12 JUNE 1992, DEPARTMENT OF STATE, WASHINGTON DC, USA

LIST OF PARTICIPANTS

* Denotes Head of Delegation

MEMBERS OF THE COMMISSION

CANADA

MR BRUCE RAWSON	Representative Department of Fisheries and Oceans, Ottawa, ontario
*MR JEAN E HACHE	Representative Department of Fisheries and Oceans, Ottawa, Ontario
DR WILF CARTER	Representative Atlantic Salmon Federation, St Andrews, New Brunswick
MR JEAN-PAUL DUGUAY	Representative Gaspé, Quebec
MR KEN JONES	Department of Fisheries and Oceans, Ottawa, Ontario
MR DAVID MEERBURG	Department of Fisheries and Oceans, Ottawa, Ontario
MR REX PORTER	Department of Fisheries and Oceans, St Johns, Newfoundland
MR DAVID RIDEOUT	Department of Fisheries and Oceans, Ottawa, Ontario

DENMARK (IN RESPECT OF THE FAROE ISLANDS AND GREENLAND)

*MR EINAR LEMCHE	Representative Greenland Home Rule Government, Copenhagen Office
MR KJARTAN HOYDAL	Representative Faroese Home Government, Torshavn, Faroe Islands
MR PETER DAVIDSEN	The Organization of Hunters & Fishermen in Greenland, Nuuk

MR JENS MOELLER JENSEN	Greenland Fisheries Research Institute, Copenhagen
MRS AMALIE JESSEN	Department of Fisheries, Greenland Home Rule Government, Nuuk
MR SIVERTH D LARSEN	The Organization of Hunters & Fishermen in Greenland, Nuuk
MRS ANNE MELDGAARD	Royal Danish Embassy of Washington
MR VITTUS NIELSEN	The Organization of Hunters & Fishermen in Greenland, Nuuk
MR SOFUS POULSEN	Faroese Commercial Attaché, Aberdeen

EEC

*MR HARRY KOSTER	Representative Directorate-General of Fisheries, EC Commission, Brussels
MR ALEXANDRE FERNANDES	Embassy of Portugal, Washington DC
MR LUIS TEIXEIRA DA COSTA	Secretariat of the Council of the European Communities, Brussels
MR JOHN CARBERY	Legal Advisor, Secretariat of the Council of the European Communities, Brussels
MR DAVID DUNKLEY	Scottish Office Agriculture and Fisheries Department, Montrose
MRS PAM JARVIS	Ministry of Agriculture and Fisheries, London
MR JESPER KAAE	Royal Danish Embassy, London
MR JOHN KEOHANE	Department of the Marine, Dublin
MR ADRIAN MCDAID	Permanent Representation of Ireland to the EC, Brussels
DR KEVIN O'GRADY	National Rivers Authority, Bristol
MR TED POTTER	Ministry of Agriculture, Fisheries and Food, Lowestoft
MR WOLFGANG THOMAS	Bundesministerium fur Ernährung, Landwirtschaft und Forsten, Bonn
MR BOB WILLIAMSON	Scottish Office Agriculture and Fisheries Department, Edinburgh

USA

*MR ALLEN PETERSON	Representative National Marine Fisheries Service, Woods Hole, Massachusetts
MR DAVID EGAN	Representative Connecticut River Atlantic Salmon Commission, Guilford
MR CLINTON TOWNSEND	Representative Maine Council of the Atlantic Salmon Federation, Canaan, Maine
DR VAUGHN ANTHONY	National Marine Fisheries Service, Woods Hole, Massachusetts
DR JENNIFER BAILEY	National Marine Fisheries Service, Maryland
MR EDWARD T BAUM	Marine Atlantic Sea Run Salmon Commission, Bangor, Maine
MS JANE CLEAVES	Atlantic Salmon Federation, Maine
MS JEAN FLEMMA	US House of Representatives, Washington DC
DR KEVIN FRIEDLAND	National Marine Fisheries Service, Woods Hole, Massachusetts
MR ROBERT JONES	Connecticut Bureau of Fisheries, Hartford, Connecticut
MR HENRY LYMAN	Atlantic Salmon Federation, Boston, Massachusetts
MR JAMES MCCALLUM	US House of Representatives, Washington DC
MR ARTHUR NEILL	National Marine Fisheries Service, Woods Hole, Massachusetts
MR GILBERT RADONSKI	Sport Fishing Institute, Washington DC
DR PAUL RAGO	US Fish & Wildlife Service, Kearneysville
MR RICHARD ROE	National Marine Fisheries Service, Gloucester, Massachusetts
MR RICHARD SEAMANS	National Marine Fisheries Service, Gloucester, Massachusetts
MR STETSON TINKHAM	Department of State, Office of Fisheries Affairs, Washington DC

DR JAMES WEAVER	US Fish and Wildlife Service, Newton Corner, Massachusetts

OBSERVERS - PARTIES

FINLAND

*MR PEKKA NISKANEN	Representative Ministry of Agriculture and Forestry, Helsinki

ICELAND

MR ARNI ISAKSSON	Representative Institute of Freshwater Fisheries, Reykjavik
MR ORRI VIGFUSSON	Association of Icelandic Fishing Clubs, Reykjavik

NORWAY

*MR BØRRE PETTERSEN	Representative Ministry of the Environment, Oslo
MR SVEIN MEHLI	Representative Directorate for Nature Management, Trondheim
MS INGER LAVIK OPDAHL	Representative Royal Ministry of Foreign Affairs, Oslo
DR LARS PETTER HANSEN	Norwegian Institute for Nature Research, Trondheim
MR GEORG RIEBER-MOHN	Regional Board of Salmon Fishery, Oslo

SWEDEN

DR INGEMAR OLSSON	Representative National Board of Fisheries, Göteborg

ICES

DR EMORY ANDERSON	International Council for the Exploration of the Sea, Copenhagen
DR RICHARD GRAINGER	International Council for the Exploration of the Sea, Copenhagen

DR FREDRIC SERCHUK	National Marine Fisheries Service, Woods Hole, Massachusetts

SECRETARIAT

DR MALCOLM WINDSOR	Secretary
DR PETER HUTCHINSON	Assistant Secretary

ANNEX 2

WGC(92)10
NINTH ANNUAL MEETING OF THE WEST GREENLAND COMMISSION
9-12 JUNE 1992
DEPARTMENT OF STATE, WASHINGTON DC, USA

AGENDA

1. Opening of the Meeting
2. Adoption of the Agenda
3. Election of Officers
4. Nomination of a Rapporteur
5. Review of the 1991 Fishery and ACFM Report from ICES on Salmon Stocks in the Commission Area
6. Regulatory Measures
7. Recommendations to the Council on Scientific Research
8. Report on NASCO Tag Return Incentive Scheme and Announcement of Awards
9. Other Business
10. Date and Place of Next Meeting
11. Consideration of the Draft Report of the Meeting

ANNEX 3

COUNCIL

CNL(92)12

REPORT OF THE ICES ADVISORY COMMITTEE ON FISHERY MANAGEMENT (SECTION 3)

3. INFORMATION OF INTEREST TO THE WEST GREENLAND COMMISSION

3.1 Description of the Fishery at West Greenland, 1991

In 1991, the fishery at West Greenland (NAFO Sub-area 1) was opened on 5 August and ended in November, although the official closing date was 31 December. The total nominal catch was 437 t.

Quota and catch (t)

Year	1986	1987	1988	1989	1990	1991
Quota	909	935	-	900	924	840
Catch	960	966	893	337	227	437 [1]

[1] Preliminary

The TAC for 1991 was set unilaterally at 840 t, and divided into a "free" quota of 373 tonnes and a "small boat" quota of 467 tonnes. Because of the small landings in 1991, those quotas were not restrictive.

The salmon fishery at Greenland is a small boat fishery and is executed in inshore and coastal areas. Approximately 80% of the total landings were taken by boats smaller then 30 feet. No information on effort is available for 1991, but the landings during the first two weeks are given for 1980 to 1991 in the text table below.

The nominal catch landings during the two first weeks, 1980-1991 (in tonnes)

Year	First week	First two weeks
1980	260	711 (01 - 14 Aug)
1981	465	735 (15 - 28 Aug)
1982	470	766 (25 Aug - 07 Sep)
1983	105	192 (10 - 23 Aug)
1984	17	58 (10 - 23 Aug)
1985	204	361 (01 - 13 Aug)
1986	509	848 (15 - 28 Aug)
1987	439	737 (25 Aug - 07 Sep)
1988	219	337 (25 Aug - 07 Sep)
1989	131	219 (18 - 31 Aug)
1990	12	38 (01 - 14 Aug)
1991	114	191 (05 - 18 Aug)

3.1.1 Composition and origin of the catch in 1991

The results of classifying salmon in samples from commercial catches in 1991 indicated that the North American proportion was 65% (95% CL = 69,61), and the European proportion was 35% (95% CL = 39,31).

An alternative estimate of the overall proportion of North American and European-origin salmon for the years 1982-1991 was derived by weighting NAFO Division samples by catch in numbers. Information from the nearest NAFO Division was applied to divisions with no samples. The table below gives the results:

Year	Weighted by catch in numbers			% of all samples		
	NA %	Wt	EU %	Wt	NA	EU
1982	57	-	43	-	62	38
1983	40	-	60	-	40	60
1984	54	-	46	-	50	50
1985	47	-	53	-	50	50
1986	59	537	41	423	57	43
1987	59	556	41	411	59	41
1988	42	349	58	544	43	57
1989	55	179	45	158	56	44
1990	74	168	26	59	75	25
1991	63	267	37	170	65	35

ACFM is concerned about the lack of a suitable test sample of scales of known origin salmon for the discriminant analysis.

In 1991, the estimated number of fish caught was 103,013 from North America and 60,935 from Europe for a total of 163,948.

An estimate of the number of Maine-origin salmon harvested at West Greenland in 1991 using the proportional harvest method was 3,757 fish.

3.1.2 Biological characteristics of the harvest

As previously observed, North American 1SW salmon were significantly shorter and lighter than their European counterparts, both overall and on an individual NAFO Division basis. Two-sea-winter salmon of North American origin were not different in length but were lighter than European-origin salmon, both overall and between NAFO Divisions at the 5% level of significance.

The sea age composition in 1991 of 94.7% 1SW, 4.9% MSW and 0.3% previous spawners indicated that there were proportionately fewer 1SW salmon and more MSW salmon than in 1990. In 1991, the 1SW components for both North American (95.6%) and European (93.4%) salmon were lower than their respective components in 1990.

The proportion of North American origin river age 1 salmon has been increasing steadily from 2% in the 1986 samples to 8.8% in the 1990 samples. In 1991, it decreased to 5.2%. In 1991, samples (<1.0%) of salmon thought to be fish farm escapees were found in the Greenland catches. The decrease in numbers of North American salmon of river age 4 years and older from the mean value of 22.0% from 1968-1990 to 17.8% in 1991 suggests that either production or migration of salmon from the northerly portion of the range in North America has decreased.

3.1.3 Historical data on tag returns and harvest estimates

Thirty USA-origin Carlin tags were returned in 1991 from Greenland without information as to year of recapture. These tags were presumably caught mostly as 1SW fish in the year following release.

The Carlin tag-based harvest estimates of 1SW Maine-origin salmon for the 1990 fishery totalled 1,525 fish.

Carlin Harvest, Maine-Origin Salmon

Year	1985	1986	1987	1988	1989	1990
Harvest	1469	2035	2087	2309	3797	1525

The CWT harvest estimate for Maine-origin salmon in 1990 was 1,613 fish.

CWT Harvest, Maine-Origin Salmon

Year	1987	1988	1989	1990
Harvest	5571	3882	2857	1613

The proportional harvest method provides estimates of harvest significantly higher than the CWT method in recent years (Figure 5). As escapees from North American aquaculture facilities could increase the estimate provided by the proportional method, ACFM recommends further investigation of the possible explanation of the discrepancy between the two methods.

3.1.4 Patterns of stock composition in the harvest

The recoveries of micro-tagged salmon indicated a north-south trend for tagged North American stocks in some years, with greater numbers in the northern NAFO Divisions. This trend was not as evident for the distribution of European tags. Analysis of the proportions of continental origin derived from scale characters indicated no consistent north-south distribution of North American or European components. However, in recent years there was an increase in the North American component at West Greenland.

3.2 Description of Homewater Fisheries

European homewater fisheries

Tagging experiments have demonstrated that all countries listed in the National Catch Table (Table 1) contribute fish to the West Greenland fishery.

However, stocks from these countries contribute to the fishery to differing extents both because the proportion of MSW salmon in the stocks varies and because of differences in their migratory behaviour in the sea. Although the relative contributions have not been estimated precisely, MSW stocks from UK, Ireland and France are thought to contribute to the fishery at a higher rate than Scandinavian stocks.

MSW salmon stocks have been in decline in many parts of Europe for at least the last 20 years. The extent of the change varies, but catches in some rivers which used to support mainly MSW salmon are now mainly 1SW fish (e.g. Rivers Exe and Eden in UK (England and Wales)).

The closure of the Norwegian drift net fishery has had beneficial effects on other fisheries in Norway, Finland, Russia and Sweden. The catch in Finland was the highest since the mid-1970s, but exploitation rates were decreased on several rivers in Russia in 1991 to provide increased spawning escapement. Rivers in Sweden, along with many in UK, Ireland and France have experienced low flows in 1990 and 1991, and these have had adverse effects on catches.

The marine survival of several monitored European stocks has been low in some recent years, particularly for the 1989 and 1990 smolt year classes. This appears to have been reflected more widely in the poor catches of 1SW fish in 1990 and both 1SW and 2SW fish in 1991. Additional information on fisheries in the North-East Atlantic is contained in Section 2.

North American homewater fisheries

The Canadian homewater fisheries consist of commercial, recreational and native food fisheries. There were about 3,300 commercial fishermen licensed to fish for salmon primarily with shore-fast set gillnets. The 1991 fisheries were under quota management with either quotas set for specific salmon fishing areas or for individual fishermen. The total commercial landings in Canada during 1991 were 512 t. Recreational fisheries occurred in all Canadian Atlantic provinces. Anglers were permitted to fish only with artificial flies and were restricted by daily and seasonal

retention limits. Retention of salmon >63cm was permitted only in Quebec and Labrador. Some rivers had specific quotas. In 1991 there were about 282,700 rod days of fishing effort which resulted in a catch of 132 t of salmon. Several native groups were permitted to fish for salmon for food in four provinces (Quebec, New Brunswick, Nova Scotia and Newfoundland and Labrador). The total harvest in all of these fisheries was 29 t. Commercial fisheries in Canada harvest salmon of USA origin.

The USA homewater fisheries consist only of recreational fisheries in the State of Maine. Anglers were permitted to fish only with artificial flies. There were daily and seasonal retention limits. In 1991, there were 3,157 licensed anglers and a harvest of 238 salmon. Additional information on fisheries in North America is contained in Section 4.

3.3 Stock Abundance and Exploitation at West Greenland

The "top-down" constraints run-reconstruction model was improved to include an additional constraint related to catches of grilse in Canada during the same year as the fishery in Greenland. Data necessary to complete this task were available for the fishery years 1983 to 1990 at West Greenland. Model outputs also were used to derive a range of abundance estimates for North American and European stocks at West Greenland prior to the fishery.

Abundance estimates for North American stocks were then used to define a range of estimates of pre-fishery abundance. A simple model was developed to illustrate the effects of various combinations of catches on the numbers of fish returning to spawn in North America. The effects of these catch combinations were illustrated for varying levels of pre-fishery abundance for 1SW salmon destined to return as 2SW spawners.

The implementation of catches required to meet specific escapement targets for various levels of abundance would depend on some pre-season indices of abundance of salmon in the Greenland fishery area.

3.3.1 Determining abundance of North American and European salmon at West Greenland

Application to North American stocks

The constraints model was used to estimate feasible ranges of exploitation rates for Canada and Greenland for 1983 to 1990 fishery years. The average minimum and maximum exploitation rates for Canada were 57 and 70% respectively. For Greenland the average minimum and maximum exploitation rates depend on the fraction unavailable (FU parameter). When FU was assumed to be 0.05, the average minimum and maximum exploitation rates in Greenland were 25 and 36%, respectively. Exploitation rates in 1983 and 1984 were particularly low, an observation consistent with the low catches in those years. Exploitation rates between 1985 and 1988 were about twice as high (about 30 to 50%); during these years the quota acted to restrict harvests in Greenland. Estimates for 1989 and 1990 are somewhere between the 1983-84 and 1985-88 periods. The 1983-84 and 1989-90 fisheries were unaffected by the quota, suggesting low abundance in the West Greenland area. When the FU

parameter is assumed to be 0.3, the estimated range of exploitation rates in Greenland increases over the entire period. The same general patterns described above still apply, with low rates in 1983 and 1984, higher rates ranging between 40 to 58% during the period 1985-88 and intermediate levels in 1989-90.

Year	Exploitation FU = .05		Exploitation FU = .30	
	Min	Max	Min	Max
1983	12	19	16	25
1984	13	21	17	28
1985	29	42	36	51
1986	34	46	41	55
1987	37	49	44	58
1988	30	45	37	55
1989	19	29	24	37
1990	23	36	29	46
Average	25	36	31	44

The total estimated abundance of all non-maturing 1SW salmon of North American origin shows a marked decline since 1986. Estimates were obtained simply by reconstructing the population for minimum and maximum values of run and harvest (Figure 6). Thus these estimates represent the entire extant stock. While the data do not indicate abundance by fishing region, the estimates illustrate an over two-fold range of pre-fishery abundance in an 8-year period.

The total abundance of all salmon in the West Greenland area can be estimated by dividing the total catch by the minimum and maximum values of exploitation rates. The derived range of abundance estimates suggest a general downward trend since 1985, regardless of whether FU = 0.05 or 0.30. Peak abundance in 1985 probably ranged from 800,000 to 1 million non-maturing salmon of all sea ages (mostly 1SW). Trends for European and North American stocks appear to be more erratic, but both stock complexes exhibit very low abundance in 1989 and 1990.

Year	Total population FU = .05		Total population FU = .30	
	Min	Max	Min	Max
1983	526,316	833,333	400,000	625,000
1984	454,762	734,615	341,071	561,765
1985	716,786	1038,103	590,294	836,250
1986	688,761	931,853	576,055	772,756
1987	623,878	826,216	527,069	694,773
1988	624,044	936,067	510,582	758,973
1989	404,897	618,000	317,351	489,250
1990	238,833	373,826	186,913	296,483

The derived estimates of fishery area exploitation rates apply collectively to most of the North American stocks that frequent the West Greenland area. To the extent that different stocks have different migration patterns, the period of residence within the fishery would determine the actual rate of exploitation on that stock. Fish that reside within the fishery for longer periods would have greater exploitation rates.

This modelling approach could be applied to specific stocks when data are available. The modelling approach has been applied to all Canadian stocks which have a significant proportion of MSW spawners. For these data, the derived exploitation rates apply to the entire group of stocks and, therefore, represent an average rate for that fraction of the population available to Greenland. The input data could be further disaggregated to incorporate stock complexes, such as northern and southern Canada rivers.

Application to European stocks

ACFM considered ways to apply similar models to the European stocks exploited at West Greenland. Because of the nature of the fisheries, the constraints model cannot be applied directly. ACFM therefore considered a preliminary estimate of the abundance of non-maturing 1SW salmon in the sea at the time of the West Greenland fishery based upon a run-reconstruction approach. Catches of 2SW salmon in homewater fisheries were used to estimate the numbers of 2SW fish returning to each country. These were then used to estimate the numbers that would have been alive in the previous year.

The assessment was carried out for 1990 catches in homewaters. This gave estimates of the numbers of non-maturing 1SW European salmon alive before the 1989 West Greenland fishery of between 915,000 and 1,242,000 salmon. Using the proportion of European salmon estimated to be in the catch that year (44%), the numbers of European fish in the area is estimated to be between 139,635 and 271,920. This

therefore suggests that between 11% and 30% of all the non-maturing 1SW European salmon were in the fishery area in 1989.

It is important to note, however, that there is a marked difference in the proportions of the stocks from the northern and southern countries that go to the West Greenland area.

3.3.2 Modelling interactive effects between abundance and exploitation rates at West Greenland in relation to achievement of North American spawning targets

The number of 2SW spawners migrating to Canadian rivers can be expressed as a function of 1SW catch in Canada (C1) and Greenland (G1), and 2SW catch in Canada (C2) for varying levels of pre-fishery abundance (N1). To illustrate potential utility of the approach, various combinations of catches (G1, C1 and C2) on estimated numbers of spawners were computed for various levels of N1. Results illustrate that a wide variety of catches would allow equivalent numbers of spawners to return.

The target number of spawners necessary to achieve conservation objectives can be called R2_target. ACFM considered a provisional estimate of R2_target of about 175,000 which represents the sum of target spawning requirements for all Canadian rivers. At low levels of pre-fishery non-maturing 1SW abundance (N1 = 200,000; Figure 7) there would be insufficient numbers of spawners (R2) to allow harvest in either Canada or West Greenland. At moderate (N1 = 400,000) and higher (N1 = 600,000) levels of abundance (Figures 8-9), a range of catch allocations among fisheries (C1 vs G1) or years (G1, C1 vs C2) would permit sufficient numbers of spawners within safe biological limits, provided that targets for component stocks were met. Based on observed projections since 1983 (Figure 6), a reasonable range of N1 values is 200,000 to 600,000 salmon.

ACFM identified several problems with using abundance and exploitation information to provide management advice, especially in relation to spawning targets. Although the combined target spawning requirements for Canadian rivers is probably between 150,000 and 200,000 2SW salmon, meaningful catch advice to provide sufficient spawning escapement for individual stocks is not readily available due to the varying proportions of stocks contributing to the fisheries. Previously, the Working Group (Anon, 1982, 1984) advised that "it is not possible at the present time to estimate and advise on a single TAC which would maintain homewater stocks and safeguard the spawning within safe biological limits". It was further advised that regulation by a single TAC would not seem to be a practical method to adequately ensure spawning escapement within safe biological limits for stocks which are, in part, harvested in mixed stock fisheries (Anon, 1984).

ACFM, however, noted that if current catches are adversely affecting the total stock, then reductions in catches would benefit the population as a whole. Benefits to specific stocks, however, could not be predicted. A method of developing a TAC which reduces catches when stocks are low would provide a means of indicating when catch reductions are biologically justified. Present methods for setting catch levels irrespective of population size pose an even greater risk to the total population during periods of low stock abundance. Future management advice could be improved as additional information on particular stocks becomes available.

ACFM considered two approaches for improving catch advice. Estimates of spawning targets could be improved by taking known individual river spawning targets and scaling these up regionally to identify a minimum overall North American target. Another alternative would be to group North American 2SW-producing stocks into "stock complexes" based on river age distributions and evaluate their contribution to catches in Canada and Greenland.

3.3.3 Indices of abundance at West Greenland

ACFM examined information from Canada which may provide a pre-season index of abundance of North American fish at West Greenland. Among several significant relationships, the predictor judged to have the greatest management potential was the count of "small" salmon in the Millbank trap on the Miramichi River. The relationship of numbers of North American river age 4 and older fish caught in the first two weeks of fishing at West Greenland on catch in number of small salmon in Labrador was also significant. In order for this relationship to be of use to management as an index of abundance of salmon at Greenland, a data series of catches of small salmon in Labrador up to a specific date would have to be developed.

It was felt that many European stocks would be unlikely to provide a pre-season index of abundance at West Greenland due to the 1SW returns being spread over the middle and latter parts of the year and being very variable. However, the Working Group recommended that data from fisheries, river counts and traps be examined further to evaluate this possibility.

3.3.4 Exploitation of Maine-origin (USA) salmon

The extant exploitation rates for 1SW Maine salmon in 1990 were lower than in the previous year but still higher than the long-term average. The extant exploitation rates for 2SW salmon in 1990 were higher than the average for the time series.

Fishery area exploitation for 1990 show exploitation in Canada and Greenland are unchanged compared to the previous year. The effects of different reporting rates of Carlin tags and different proportions of the stock population available to each fishery are presented in Figure 10 and these indicate the possible range of fishery area exploitation in 1987-1990.

Estimates of exploitation rates for Maine stocks in Canada and Greenland are generally higher than those estimated by the continental run-reconstruction model. Those estimates of fishery area exploitation rates are based on the aggregate behaviour of many hundreds of stocks. Maine stocks are near the southern boundary of Atlantic salmon habitat and likely have different migration routes than the major Canadian stocks.

3.4 Advice on Catch Levels at West Greenland

ICES was asked to propose and evaluate methods to estimate possible catch levels based upon maintaining adequate spawning biomass. The general concerns about the difficulties of applying a TAC are expressed in Section 3.3.2. Although advances have been made in our understanding of population dynamics of Atlantic salmon and

the exploitation occurring in the fisheries, the concerns about the implications of application of TACs to mixed stock fisheries are still relevant.

ACFM considered how the predictive measures of abundance could be implemented to give annual catch advice. The aim of the advice would be to limit catch to a level that would facilitate achieving overall spawning escapement equivalent to the sum of spawning targets in individual North American and European rivers (when the latter have been defined). To achieve the desired level of exploitation, for a given level of predicted abundance, either a TAC could be fixed or some form of effort limitation introduced.

Effort limitation would, in theory, provide a greater range of options for management, such as season length restrictions, regulating the number of boats or licences or closed periods in the fishery. However, no reliable data exists on the relationship between effort and exploitation in the fishery.

The methodology employed in Section 3.3.2 simply defines the trade-offs in catches of non-maturing 1SW salmon in Canada and Greenland and 2SW catches in Canada in the following year. In particular, it defines a set of feasible combinations that may ensure that an overall spawning target is met. The advice for any given year is dependent on obtaining a reliable predictor of total non-maturing 1SW abundance for North American stocks. Since pre-fishery abundance for year i is the sum of the catches in year i and catches plus returns in year i+1, the advice for year i+1 fisheries (2SW) could be improved by updating the prediction conditioned on the 1SW catches in year i. For the 1983-1990 data the regression between total 2SW returns plus 2SW catches and total 1SW catches had a coefficient of determination of 0.76. More importantly, the standard error of the prediction was relatively small (i.e. 25,000 fish). Hence, management corrections for 2SW catches may be possible.

In contrast, prediction of pre-fishery abundance of 1SW salmon destined to return as 2SW salon (N1) is much more difficult, as described in previous sections. One possibility would be to use simple trend analysis of the abundance data in Figure 6 to project future abundance. Such predictions could have wide prediction intervals and it would be important to proceed cautiously by using the lower range of predicted abundance levels for management decisions. Further analysis of the error structure of the N1 abundance estimates might provide a means of imputing error bounds on the projections. In turn, these error bounds could be incorporated into the catch advice and expressed in terms of the likelihood of achieving spawning targets.

3.5 By-Catches in the Greenland Salmon Drift Net Fishery

By-catch information for the West Greenland salmon drift net fishery is not routinely recorded. The only information available on by-catch was collected during research investigations of 1970s and in 1980s is not considered applicable to the present fishery due to changes in fishing patterns. Details of these earlier investigations can be found in the Report of the Working Group (Anon, 1992).

3.6 Adequacy of Sampling Program at West Greenland

The sampling program at West Greenland was found to be of adequate spatial coverage but of inadequate temporal coverage in some years. ACFM recommends the program be expanded in one or two locations by one to two weeks of additional sampling.

REFERENCES

Anon, 1982. Report of Meeting of the Working Group on North Atlantic Salmon. ICES Headquarters, Copenhagen, 13-16 April 1982. ICES, Doc. C.M. 1982/Assess:19.

Anon, 1984. Report of Meeting of the Working Group on North Atlantic Salmon. Aberdeen, 20 April - 4 May 1984. ICES, Doc. C.M. 1984/Assess:16.

Anon, 1982. Report of the Working Group on North Atlantic Salmon. Dublin, 5-12 March 1992. ICES, Doc C.M. 1992/Assess:15.

Table 1. Nominal catch of SALMON by country (in tonnes round fresh weight), 1960-1991 (1991 provisional figures).

Year	Canada (4)	Den.	Faroes	Finland	France	East Grld.	West Grld.	Iceland	Ireland (1)	Norway (3)	Russia	St. P & M.	Sweden (W. C.)	UK E. & W.	UK Scotland	UK N.I.(1,2)	USA	Others (5)	Total
1960	1636	-	-	-	-	-	60	100	743	1659	1100	-	40	283	1443	139	1	-	7204
1961	1583	-	-	-	-	-	127	127	707	1533	790	-	27	232	1185	132	1	-	6444
1962	1719	-	-	-	-	-	244	125	1459	1935	710	-	45	318	1738	356	1	-	8650
1963	1861	-	-	-	-	-	466	145	1458	1786	480	-	23	325	1725	306	1	-	8576
1964	2069	-	-	-	-	-	1539	135	1617	2147	590	-	36	307	1907	377	1	-	10725
1965	2116	-	-	-	-	-	861	133	1457	2000	590	-	40	320	1593	281	1	-	9392
1966	2369	-	-	-	-	-	1370	106	1238	1791	570	-	36	387	1595	287	1	-	9750
1967	2863	-	-	-	-	-	1601	146	1463	1980	883	-	25	420	2117	449	1	-	11948
1968	2111	-	5	-	-	-	1127	162	1413	1514	827	-	20	282	1578	312	1	403	9755
1969	2202	-	7	-	-	-	2210	133	1730	1383	360	-	22	377	1955	267	1	893	11540
1970	2323	-	12	-	-	-	2146	195	1787	1171	448	-	20	527	1392	297	1	922	11241
1971	1992	-	-	-	-	-	2689	204	1639	1207	417	-	18	426	1421	234	1	471	10719
1972	1759	-	9	32	34	-	2113	250	1804	1568	462	-	18	442	1727	210	1	486	10915
1973	2434	-	28	50	12	-	2341	256	1930	1726	772	-	23	450	2006	182	2.7	533	12746
1974	2539	-	20	76	13	-	1917	225	2128	1633	709	-	32	383	1708	184	0.9	373	11941
1975	2485	-	28	76	25	-	2030	266	2216	1537	811	-	26	447	1621	164	1.7	475	12209
1976	2506	-	40	66	9	<1	1175	225	1561	1530	772	2.5	20	208	1019	113	0.8	289	9536
1977	2545	-	40	59	19	6	1420	230	1372	1488	497	-	10	345	1160	110	2.4	192	9495
1978	1545	-	37	37	20	8	984	291	1230	1050	476	-	10	349	1323	148	4.1	138	7650
1979	1287	-	119	26	10	<1	1395	225	1097	1831	455	-	12	261	1076	99	2.5	193	8089
1980	2680	-	536	34	30	<1	1194	249	947	1830	664	-	17	360	1134	122	5.5	277	10060
1981	2437	-	1025	44	20	<1	1264	163	685	1656	463	-	26	493	1233	101	6	313	9929
1982	1798	-	865	54	20	<1	1077	147	993	1348	354	-	25	286	1092	132	6.4	437	8634
1983	1424	-	678	57	16	<1	310	198	1656	1550	507	3	28	429	1221	187	1.3	466	8731
1984	1112	-	628	44	25	<1	297	159	829	1623	593	3	40	345	1013	78	2.2	101	6892
1985	1133	-	566	49	22	7	864	217	1595	1561	659	3	45	361	913	98	2.1	-	8095
1986	1559	-	530	38	28	19	960	310	1730	1598	608	2.5	54	430	1271	109	1.9	-	9248
1987	1784	-	576	49	27	<1	966	222	1239	1385	564	2	47	302	922	56	1.2	-	8142
1988	1311	-	243	34	32	4	893	396	1874	1076	419	2	40	395	882	114	0.9	-	7716
1989	1139	-	364	52	14	<1	337	278	1079	905	359	2	29	296	895	142	1.7	-	5893
1990	911	13	315	59	15	<1	227	426	586	930	315	2	33	338	624	94	2.4	-	4890
1991	679	3.3	95	69	13	4	437	519	422	885	215	1	38	199	395	55	0.8	-	4030

1. Catch on River foyle allocated 50% Ireland and 50% Northern Ireland.

2. Not including angling catch (mainly grilse).

3. Before 1968, sea trout and sea charr included (5% total).

4. Includes estimates of some local sales and by-catch.

5. Includes catches in Norwegian Sea by vessels from Denmark, Sweden, Germany, Norway and Finland.

Figure 5. Harvest with confidence limits for 1987-90.

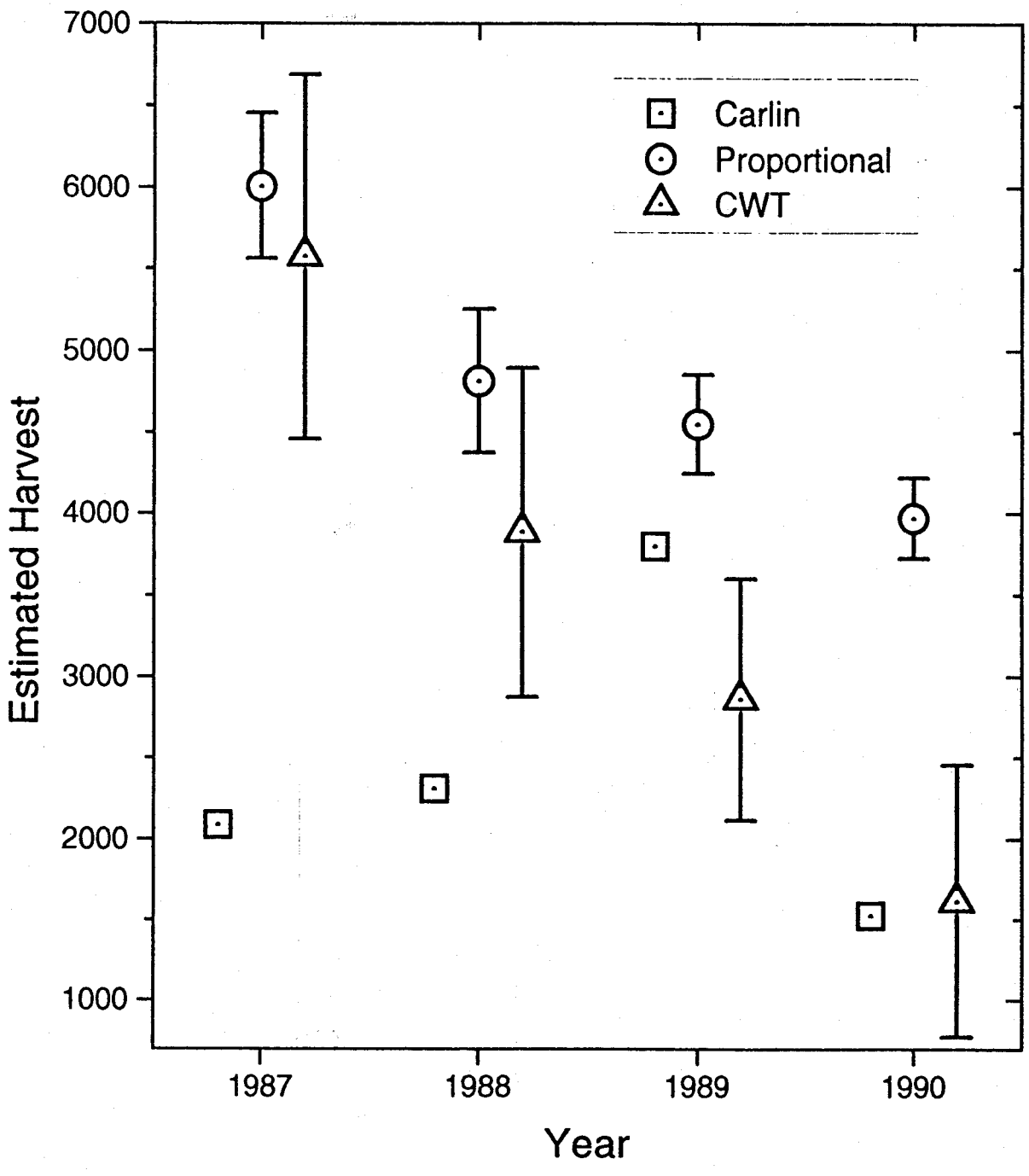


Figure 6. Estimated pre-fishery abundance (year i) of 1SW salmon of North American origin destined to retruns as 2SW fish in year (i+1). Estimate includes all salmon regardless of location.

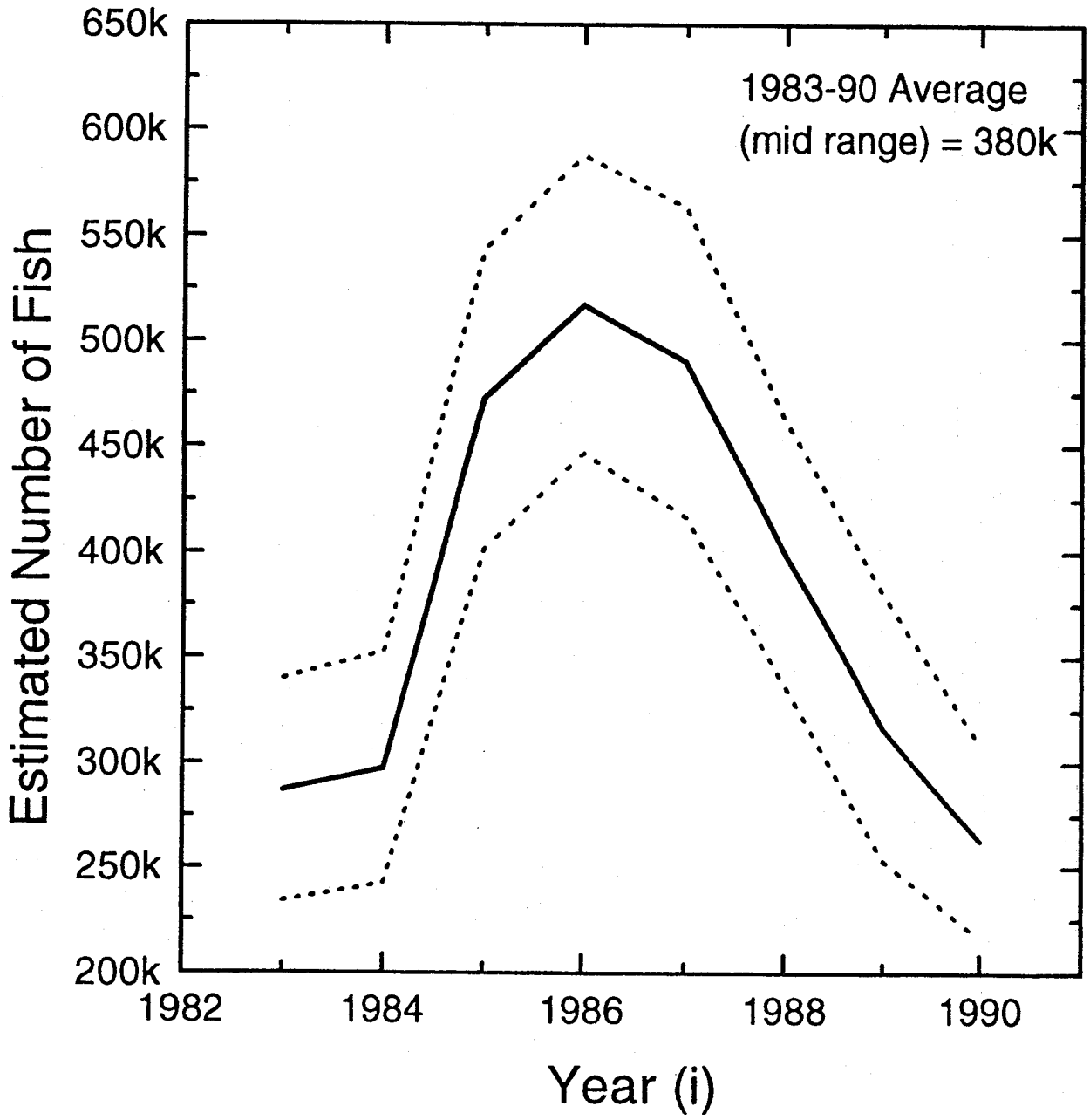


Figure 7. Predicted number of spawners remaining after fisheries on non-maturing 1SW salmon in Canada (C1) and Greenland (G1) and 2SW salmon in Canada (C2). Pre-fishery abundance of 1SW salmon destined to return as 2SW spawners is 200,000 fish.

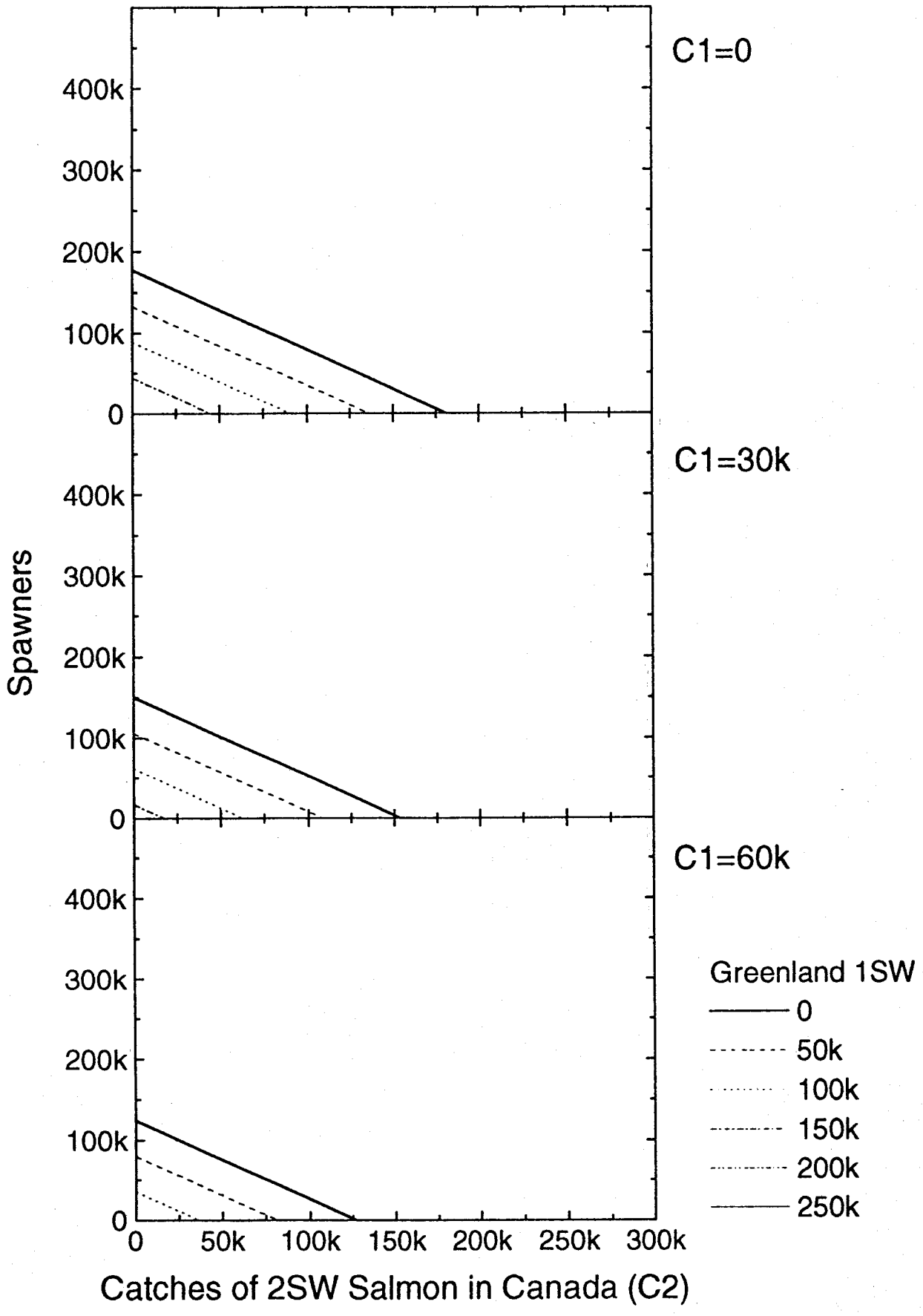


Figure 8. Predicted number of spawners remaining after fisheries on non-maturing 1SW salmon in Canada (C1) and Greenland (G1) and 2SW salmon in Canada (C2). Pre-fishery abundance of 1SW salmon destined to return as 2SW spawners is 400,000 fish.

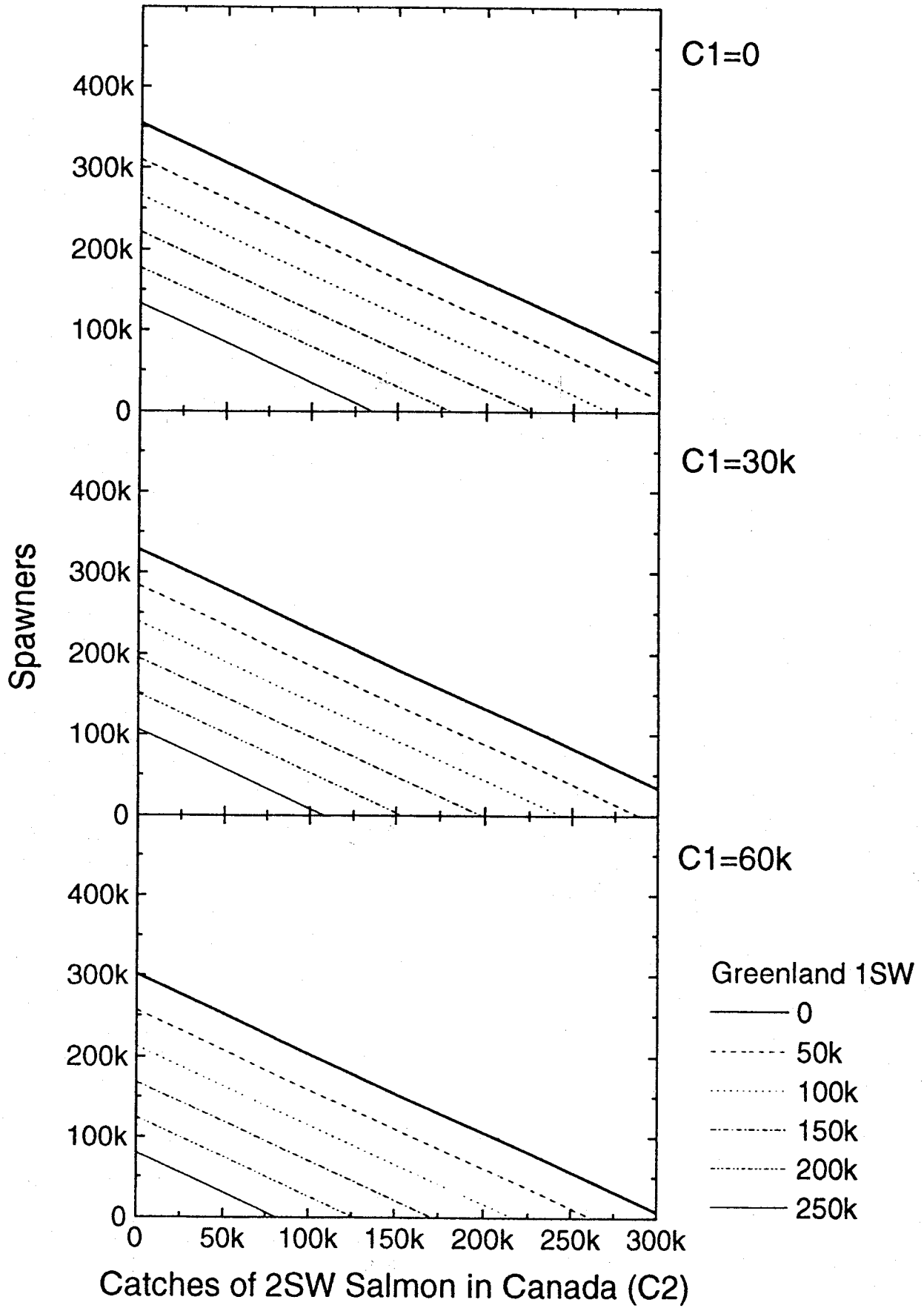


Figure 9. Predicted number of spawners remaining after fisheries on non-maturing 1SW salmon in Canada (C1) and Greenland (G1) and 2SW salmon in Canada (C2). Pre-fishery abundance of 1SW salmon destined to return as 2SW spawners is 600,000 fish.

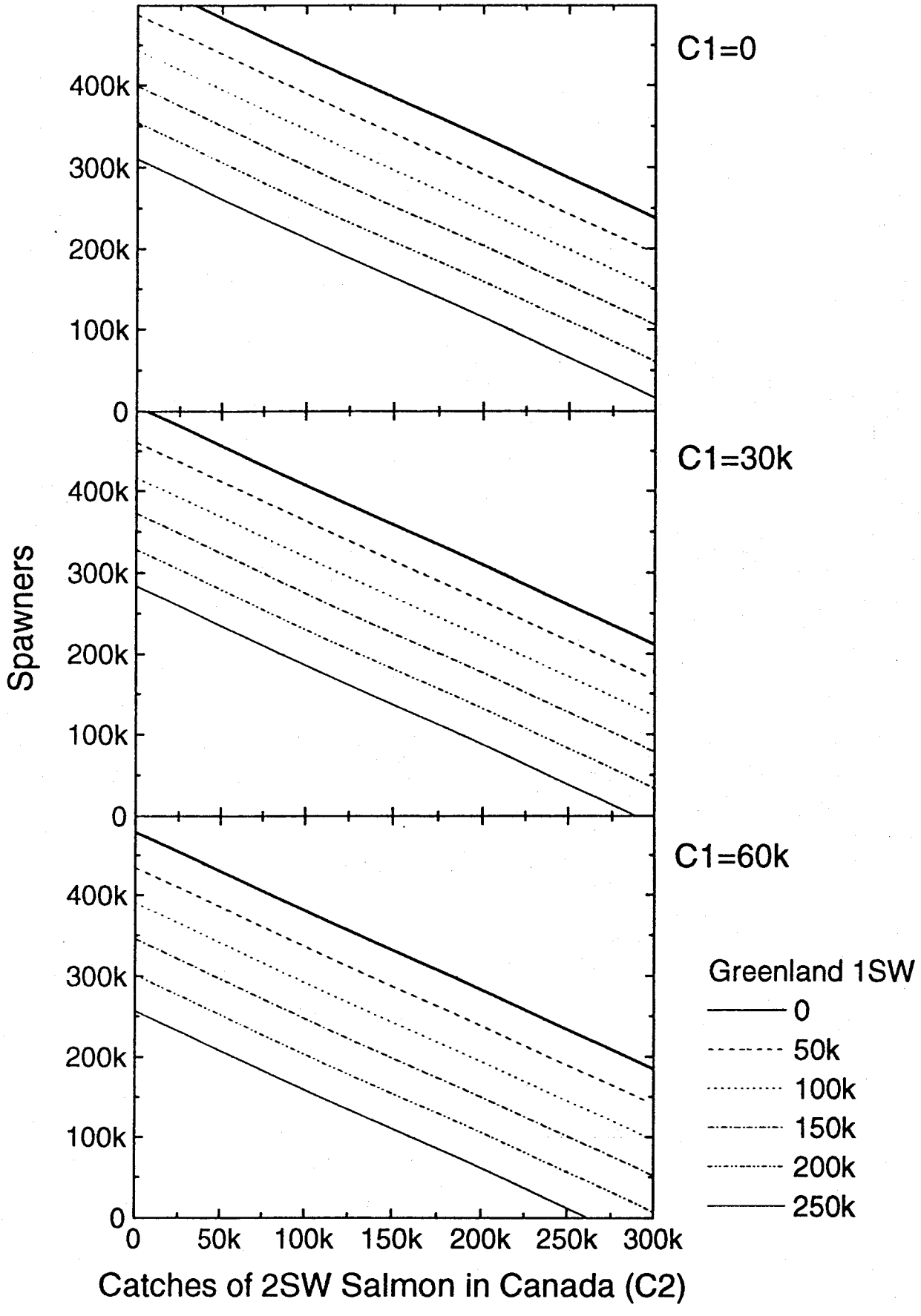
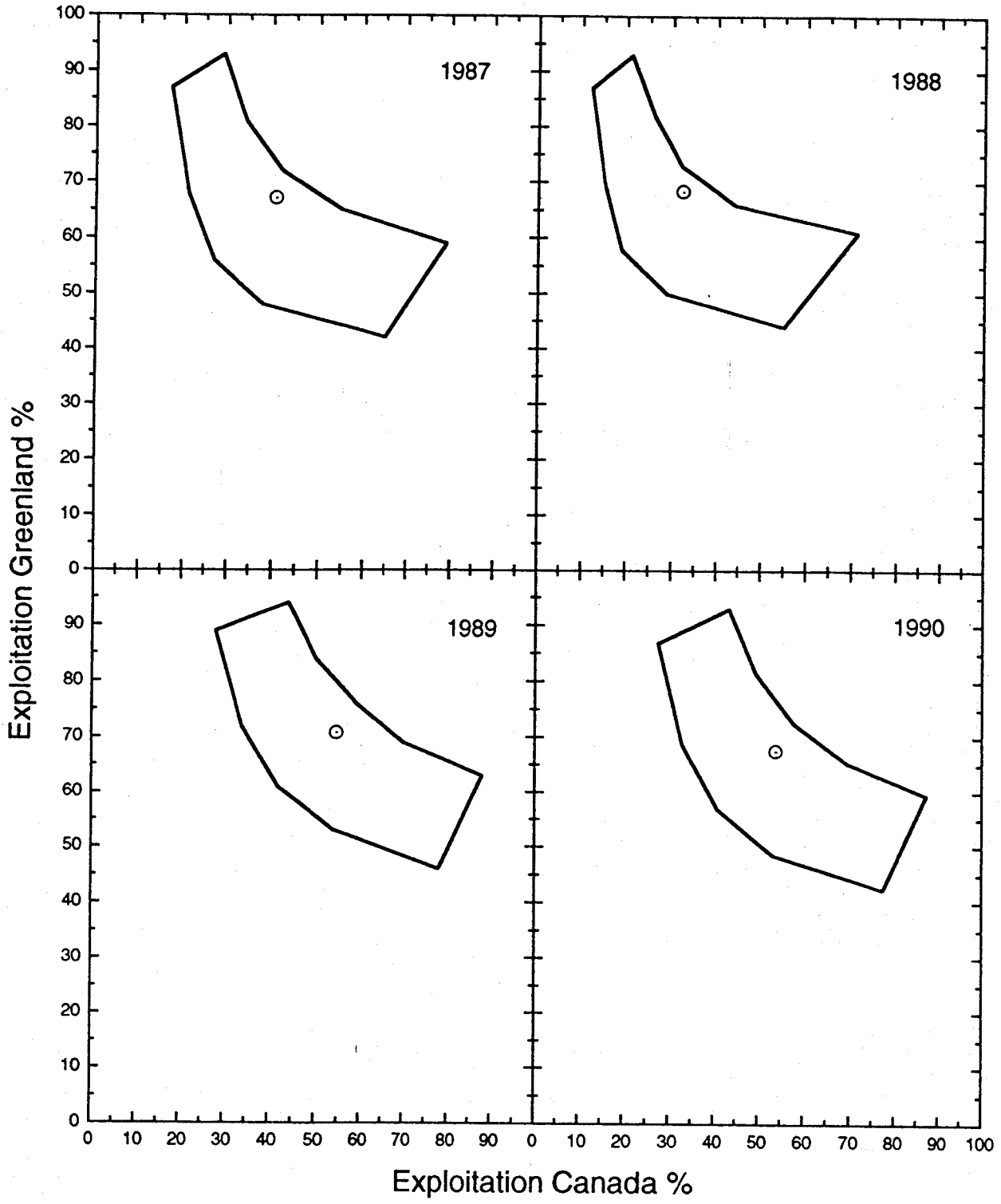


Figure 10. Effect of Carlin tag reporting rate and proportion of Maine origin stocks available to the fisheries in Greenland and Canada. Upper line of each panel represents fishery area exploitation with a tag reporting rate adjustment of 2; lower line, reporting rate is unadjusted. Midpoint represents average of the perimeter values.



ANNEX 4

WEST GREENLAND COMMISSION

WGC(92)7

DRAFT PROPOSAL BY DENMARK (IN RESPECT OF THE FAROE ISLANDS AND GREENLAND) FOR DEVELOPING A RATIONAL APPROACH TO THE MANAGEMENT OF SALMON AT WEST GREENLAND

WGC(92)7

DRAFT PROPOSAL BY DENMARK (IN RESPECT OF THE FAROE ISLANDS AND GREENLAND) FOR DEVELOPING A RATIONAL APPROACH TO THE MANAGEMENT OF SALMON AT WEST GREENLAND

As declared at the 1991 Annual Meeting, Greenland is prepared to discuss a model according to which Greenland's quota will move up or down in relation to the situation of the stock.

With a view to implementing such a model, some principles are listed below on which Greenland would like an agreement to be reached (I). Moreover, there are some questions to ICES, which Greenland wants NASCO to ask (II):

I. Principles

1) The quota should be higher if the situation improves.

2) The basis of any movements up or down should be the present level of the quota (840 tons).

3) Importance should be attached to the situation in the rivers which are major contributors to the salmon fishing near Greenland. The situation in other rivers is irrelevant.

4) Any aggravation of the situation, which is beyond Greenland's control, should not have negative effects for the Greenland quota (for example poaching, illegal high-sea fishing, acid rain, negative influence from farmed salmon).

5) Measures taken in homewaters must be expected (on account of the short distance to the rivers) to influence the situation of the stock to a higher degree than measures taken near Greenland, cf. Question II,2. This should be reflected in the size of the movements in the Greenland quota.

6) The socio-economic value of angler catches, for a given quantity of salmon, may be higher than of commercial catches. Measures taken in homewaters which aim at an even higher increase in the rivers with a view to a change from commercial fishing to angling should not influence the Greenland quota.

II. Question to ICES

1) Which rivers are major contributors to salmon fishing near Greenland?

2) The relative importance to the stocks of the regulatory measures in homewaters and near Greenland, respectively.

3) To what extent is the situation with a view to grilse relevant for the salmon that come to Greenland?

ANNEX 5

COUNCIL

CNL(92)51

DECISION OF THE COUNCIL TO REQUEST SCIENTIFIC ADVICE FROM ICES

CNL(92)51

DECISION OF THE COUNCIL TO REQUEST SCIENTIFIC ADVICE FROM ICES

1. With respect to Atlantic salmon in each Commission area, where relevant:

   a. describe the events of the 1992 fisheries with respect to catches (including unreported catches), gear, effort, composition and origin of the catch (including escapees and sea-ranched fish), and rates of exploitation;
   b. describe the status of the stocks occurring in the Commission area, and where possible evaluate escapement against targets.
   c. evaluate causes of the apparent reduced survival of salmon in recent years;
   d. evaluate the by-catch and mortality of salmon in non-salmon directed fisheries.
   e. specify data deficiencies and research needs.

2. Evaluate the following management measures on the stocks and fisheries occurring in the respective Commission areas:

   a. quota management measures and closures implemented in 1991 and 1992 in the Newfoundland and Labrador commercial salmon fisheries;
   b. regulations introduced into the Norwegian salmon fisheries in 1989;
   c. evaluate the effects of cessation of fishing activity at Faroes.

3. With respect to the fishery in the West Greenland Commission area:

   a. describe which stocks make the greatest numerical contributions of salmon to the fishery and which stocks are most heavily exploited in the fishery;
   b. describe the relative importance to stocks of regulatory measures in the fishery and in home waters;
   c. describe the relationship between the abundance of grilse and multi-sea-winter salmon in returns to homewaters and the effects of this on the management of the fishery.
   d. continue the development of a model which could be used in the setting of catch quotas in relation to stock abundance and provide worked examples with an assessment of risks relative to the management objective of achieving adequate spawning biomass.
   e. estimate the pre-fishery abundance of non-maturing 1SW salmon at the time of the fishery.

4. Review biological indicators, if any, which would make it possible to assess trends in the abundance of salmon in the North-East Atlantic.

5. With respect to the assessment of fisheries in each Commission area, evaluate the effects of the NASCO tag return incentive scheme.

6. With respect to Atlantic salmon in the NASCO area, provide a compilation of microtag, finclip, and external tag releases by ICES Member Countries in 1992.

ANNEX 6

WEST GREENLAND COMMISSION

PAPER WGC(92)5

NASCO TAG RETURN INCENTIVE SCHEME

1992 PRIZES

The draw for the 10 winners in the West Greenland Commission was made by the Auditor at NASCO Headquarters on 27 May 1992. At the Ninth Annual Meeting of the Commission in Washington DC, the Chairman of the Commission, Dr Wilfred Carter, announced the winners:

First prize - $1500 - Jens Kristiansen, 3912 Napassoq, Greenland

Second prize - $1000 - Kristian Isaksen, Cpr 240939-2191, Alluitsup-Paa, 3920 Qaqortoq

Third prize - $500 - Augo Kleist, Cpr 101037-2387, Sisimiut, Siimuup A.13, Greenland 3911

Fourth prizes - $100 - Alibak Simonsen, Cpr 101069-2411, Maniitsoq, Greenland 3912

- Adam Johsen, 3912 Napassoq, Greenland

- Angutinguak Frederiksen, Blok V-106, Paamiut, Greenland 3940

- Rosa Andreassen, Cpr 100837-2224, Aqqartarfik B 1-202, 3991 Sisimiut, Greenland

- Kristoffer Jessen, Cpr 220260-2919, Annertusoq B 1061-202, 3912 Maniitsoq, Greenland

- Sven Johannsen, Cpr 270266-2705, Nuussuaq, Nunngarut 14001, Greenland

- Frederik Jokumsen, Cpr 070105-1777, B-70 3932, Arsuk, Greenland

The Commission offers its congratulations to the winners.

ANNEX 7

LIST OF WEST GREENLAND COMMISSION PAPERS

PAPER NO.	TITLE
WGC(92)1	Provisional Agenda
WGC(92)2	Draft Agenda
WGC(92)3	Election of Officers
WGC(92)4	Draft Report of the Ninth Annual Meeting
WGC(92)5	NASCO Tag Return Incentive Scheme, 1992 Prizes
WGC(92)6	Figures Used by the Chairman of ACFM in His Presentation to the Commission
WGC(92)7	Draft Proposal by Denmark (in respect of the Faroe Islands and Greenland) for Developing a Rational Approach to the Management of Salmon at West Greenland
WGC(92)8	Questions of Interest to the West Greenland Commission of NASCO for Inclusion in the Request to ICES for Scientific Advice
WGC(92)9	Not Issued
WGC(92)10	Agenda
WGC(92)11	Report of the Ninth Annual Meeting of the West Greenland Commission
CNL(92)12	Report of the ICES Advisory Committee on Fishery Management

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.