Canadian Atlantic Fisheries
Scientific Advisory Committee

CAFSAC Research Document 89/2

Comité scientifique consultatif des
pêches canadiennes dans l'Atlantique

CSCPCA document de recherche 89/2

Status of Atlantic salmon stocks, Gulf Region, Newfoundland and Labrador, 1988

by

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ABSTRACT

Using catch as an abundance index, 1988 may be considered an above average year for returns of 1SW salmon to Gulf Newfoundland and Labrador waters. Commercial and recreational landings of 1SW salmon were above 1987, five, and ten year means. Returns of MSW salmon were below 1987 and long term means in the commercial fisheries, but Area O, the only Area MSW salmon may be retained, had recreational catches above 1987 and long term means. In the remaining Areas, MSW salmon account for only 5% of the recreational catch.

Commercial catches were higher during PLAN compared to PRE-PLAN years only in SFA 13. In SFA's 13 and 14, recreational catches during PLAN years were within 10% of PRE-PLAN years.

RESUME

Si l'on se fie sur les prises comme indice d'abondance, on peut considérer que les remontées de saumon unibermarins dans les eaux du Golfe situées à Terre-Neuve et au Labrador ont été supérieures à la moyenne en 1988. Les débarquements commerciaux et sportifs de saumons unibermarins ont en effet dépassé la moyenne de 1987, ainsi que les moyennes sur cinq et dix ans. Les remontées de saumons pluribermarins ont été inférieures à celles de 1987 et à la moyenne à long terme dans la pêche commerciale, mais dans la zone O, la seule où on peut conserver des pluribermarins, les prises sportives ont été supérieures à ces deux valeurs de référence. Dans les autres zones, le saumon pluribermarins, ne représente que 5 % des prises sportives.

Pendant la période du PLAN, les prises commerciales n'ont dépassé leurs niveaux antérieurs que dans la ZPS 13. En ce qui concerne les prises sportives dans les ZPS 13 et 14, l'écart par rapport aux années précédant l'entrée en vigueur du PLAN était de l'ordre de 10 %.

INTRODUCTION

This paper presents the status of Atlantic salmon stocks in Gulf Region portions of Newfoundland and Labrador for 1988. The Gulf Region consists of three Salmon Fishing Areas (12, 13, 14) which are comprised of seven Statistical Areas [J_2, K, L, M, N, O(50), A(01)] (Fig. 1; Table 1). There are 51 scheduled salmon rivers in the Gulf Region (Fig. 2; Table 2) and river escapements are counted on five, by fishways on Torrent and Lomond Rivers and counting fences on Western Arm, Hughes and Fischells Brooks (Fig. 2; Table 2).

Commercial and recreational harvest statistics, fishway, and fence counts are compared to historical data with consideration for the 1988 management plan to assess the status of West Newfoundland and Southern Labrador salmon stocks.

Commercial regulations in 1988 were similar to those in effect for 1987. Area 12 remained closed, Area 13 was open from June 5 - July 10 as from 1984 - 1987 (the July 10 closing date has been in effect since 1978). Area 14 was open from June 5 - October 15 compared to June 12 - December 13 in years previous to 1986. No new licenses were issued in 1988. In 1987, there were 403 licenses in the Gulf Region which included 61 in Southern Labrador. Full-time fishermen were licensed for a maximum of 200 fathoms of gillnet. Mesh sizes permitted in Salmon Fishing Area 13 were as follows: Cape Ray - Cape Anguille 127 mm, Cape Anguile - Cape George 114 mm, and Cape George - Cape St. Gregory 127 mm. A mesh size of 127 mm was permitted throughout Salmon Fishing Area 14.

Recreational fishery regulations were also similar to 1987. Subject to closures as a result of low water levels, quotas being caught, and local variation orders the following seasons applied to this fishery (Table 3).

Area	Season
Fox Point to Cape Ray	June 18 - Sept. 5
Cape Ray to Salmon Point (Bonne Bay)	June 4 - Sept. 5
Salmon Point to Cape Bauld	June 18 - Sept. 5
Southern Labrador	June 4 - Sept. 11

Anglers were required to release salmon > 63 cm in insular Newfoundland but these salmon could be retained in Southern Labrador. The seasonal bag limit of 15 fish, daily limit of two retained, and daily limit of 4 hooked and released introduced in 1986 remained in effect for 1988.

METHODS

Catch statistics for SFA 12 have been updated to include only rivers in the Gulf Region. In addition 1986 and 1987 values have been updated from previous reports. As a result summary tables will differ slightly from those in Claytor and Mullins (1988).

Commercial landings were compiled from original purchase slips forwarded from buyers and supplementary "B" purchase slips from Protection and Regulations Branch field personnel. Landing information received from buyers had been sized (small < 2.7 kg; large > 2.7 kg) and weights and numbers of salmon indicated on most slips. Landings reported on supplementary "B" slips were sized, but numbers were usually not provided.

Unsized salmon reported on purchase slips and supplementary "B" slips were portioned into small and large sizes based on the percentage of sized categories by section over the entire season (Ash and O'Connell 1986).

In 1988, sales of salmon to licensed buyers were in the gutted head-on and salted conditions. A conversion factor of 1.2 was used to convert gutted head-on to round weight. A conversion factor of 1.3 was used to convert salted to head-on condition (Reddin and Short 1981). Less than 1% of fish sold were in salted condition.

The historical commercial landings are added to those previously compiled by Claytor and Mullins (1988).

Counts of salmon at Torrent River fishway and Western Arm Brook fence are obtained by Marine and Anadromous Fish Division personnel, Lomond River fishway by Parks Canada, Fischells Brook by the Salmon Preservation Association for the Waters of Newfoundland (SPAWN), and Hughes Brook by North Shore Bay of Islands Development Association (supplied by J. Peppar, DFO Corner Brook, Newfoundland).

RESULTS

COMMERCIAL FISHERIES
GULF REGION

Commercial landings of total salmon catches by number were within 10% of 1987 and ten year means but 40% above the five year mean. However, the trends for small and large salmon were in opposite directions. Small salmon catches were greater than 1987, five and ten year means, while large salmon catches were below each of these values (Table 4).

Large salmon catches were below 1987 values for every Area except Area L, while small salmon catches were greater than 1987 for every Area except Areas A and O (Table 4). The decline in large salmon catches was most pronounced in Area O (Table 4), which still accounted for most of the large salmon catch in Newfoundland Gulf Region (Table 5).

Regional total and large catches declined during PLAN as opposed to PRE-PLAN years, while small salmon catches increased. Total, small and large salmon catches each increased by greater than 40% for SFA 13, while each decreased by 10% for SFA 14 (Table 6).

In 1987 water levels were below average in several areas of Newfoundland (Anon. 1985, 1986, 1987, 1988). For this reason, 1987 was excluded from the means for PLAN years. Commercial catches were generally above average in 1987. Hence, removing 1987 from PLAN years, generally increased negative but decreased positive changes when comparing PLAN and PRE-PLAN years. However, no conclusions regarding general trends between PLAN and PRE-PLAN years were altered.

Overall the commercial salmon catch consisted of 80% small salmon by number (Table 7). The commercial fishery has been closed in SFA 12 since 1984 (Table 8).

SALMON FISHING AREA 13

Commercial landings of total, small and large salmon catches in 1988 were greater than 1987, five and ten year means (Table 4). In general this trend applied to both Areas K and L, although large salmon catches in Area K were slightly below 1987 and large salmon catches in Area L were slightly below the five year mean (Table 4).

All catches during PLAN years were 30-70% greater than PRE-PLAN years in Areas K and L (Table 6).

The commercial catch consisted of 81% small salmon by number (Table 9). Area K harvested more than twice as many total, small and large salmon by number than Area L (Tables 10, 11). The catch of Area K was 85% small salmon by number and for Area L was 91% (Tables 10, 11).

SALMON FISHING AREA 14

Commercial landings of total salmon catches were below 1987, but above five and ten year means. The reduction in total catches was primarily the result of a 46% drop in large salmon catches compared to 1987, while small salmon catches were within 10% of last year's values. In contrast to each other, small salmon catches were above five and ten year means, while large salmon catches were below five and ten year means (Table 4).

The reduction in large salmon catches was consistent through all areas while small salmon catches declined only in Areas A and O from 1987. However, large salmon catches were below five and ten year means only in Areas N and O. Catches of small and large salmon were above or within 10% of five and ten year means for all other Areas (Table 4).

Total, small and large catches during PLAN years were about 10% below those of PRE-PLAN years for SFA 14. Large salmon catches during the PLAN were above PRE-PLAN years only in Area M, while small salmon catches were above PRE-PLAN years in Areas A and O (Table 6).

The commercial catch consisted of 79% small salmon by number (Table 12). Small salmon comprised over 80% of the catch in Areas M, N, and

A, but only 61% of catch in Area O (Tables 13-16). The greatest small salmon catch occurred in Area M, but most large salmon were taken in Area O (Tables 13-16).

RECREATIONAL FISHERIES
GULF REGION

Recreational catches of 1SW and MSW were 30% above 1987 and 2 to 30% above five and ten year means. Catches of 1SW salmon were below 1987 landings only in Area O. However, 1SW catches in this area were above five and ten year means (Table 17). Catches of MSW salmon were below 1987 only in SFA 12 and Area N but these Areas account for < 5% of MSW catch in West Newfoundland and Southern Labrador (Table 18). 1SW and MSW recreational catch was evenly divided between SFA's 13 and 14, with SFA 12 accounting for < 10% of these catches (Table 18).

Overall recreational catches of 1SW and MSW salmon were less during PLAN than PRE-PLAN years. SFA 12 and Area M were the only areas to have higher catches of 1SW and MSW salmon during PLAN years relative to PRE-PLAN. MSW salmon catches in Area O were greater during PLAN than PRE-PLAN years. However, they were within 10% (Table 19).

In 1987 recreational catches were generally below mean values for PLAN years. Hence, removing 1987 from PLAN years generally decreased negative but increased positive changes when comparing PLAN and PRE-PLAN years. However, no conclusions regarding general trends between PLAN and PRE-PLAN years were altered.

Overall the recreational catch consisted of 94% 1SW salmon and catch per unit effort was similar in 1988 to 1987, five and ten year means (Table 20). The greatest 1SW catch occurred in the Humber River with over 4000 fish taken. River of Ponds, Portland Creek and Grand Codroy had catches of over 1000 1SW salmon (Table 21).

SALMON FISHING AREA 12

Most of the catch in SFA 12 is 1SW salmon (97%) (Table 22) and catches in 1988 were greater than 1987, five and ten year means (Table 17). Effort was above 1987, five and ten year means, but catch per unit effort was similar to these means (Table 22). The largest 1SW salmon catch (410) occurred in Burnt Island River (Table 21). Catches during PLAN years were above those of PRE-PLAN years (Table 19).

SALMON FISHING AREA 13

About half the 1SW and MSW recreational catches are taken in SFA 13 (Table 18). However, 94% of the fish caught in SFA 13 are 1SW salmon (Table 23). Catches of 1SW salmon were greater than 1987, five and ten year means. MSW salmon catches were above 1987 but below five and ten year means

(Table 17). Effort and catch per unit effort were similar to recent and long term means (Table 23).

Catches of 1SW and MSW salmon were above 1987, five and ten year means in both Areas K and L, except MSW salmon catches were well below long term means in Area K (Tables 17, 24, 25). The greatest catch of 1SW salmon and MSW salmon hooked and released occurred in Grand Codroy River for Area K and Humber River for Area L (Table 21).

Catches of 1SW and MSW salmon during PLAN years were below PRE-PLAN years (Table 19).

SALMON FISHING AREA 14

About half the 1SW and MSW salmon catches are taken in SFA 14 (Table 18). However, SFA 14 has the only Area, Area O (Section 50), that MSW salmon may be retained. Areas O (Section 50) and M account for 99% of the MSW and 75% of 1SW salmon caught in this SFA (Tables 18, 26-30).

In general, 1SW and MSW catches were above 1987, five and ten year means (Table 17). Only 1SW salmon catches in Area O (Section 50) were below 1987 values, while all other catches in this area were above five and ten year means. The below average MSW salmon catches in Area N likely reflect hook and release accounting rather than abundance declines, as MSW catches were low in this area prior to hook and release. Effort but not catch per unit effort was above 1987, five and ten year means (Tables 26-30).

The highest catch of 1SW salmon in Area M occurred in River of Ponds and the highest MSW salmon catch was in Portland Creek. The greatest 1SW salmon catch in Area N was in Ste. Genevieve River. The greatest 1SW salmon catch in Area A (Section 1) was in Upper Brook. The greatest 1SW and MSW salmon catch in Area O (Section 50) was in the Pinware River (Table 21).

Catches of 1SW and MSW salmon were above during PLAN compared to PRE-PLAN years only in Area M (Table 19).

COUNTING FENCES, FISHWAYS, JUVENILE DENSITIES

Total adult returns to Hughes Brook (Area L) and Lomond River (Area M) were above average and the highest since 1984. Total adult returns to the more northern facilities, Torrent River and Western Arm Brook were below 1987 returns. Torrent River 1988 returns were similar to the five and ten year means. Western Arm Brook returns to the fence were below five and ten year means (Table 31).

AREA K

A counting fence was maintained on Fischells Brook for the first year from June 10 - August 21, 1988. Counts at Fischells in conjunction with

electrofishing data from Harrys River were used to assess the status of Area K salmon stocks.

Counts of 593 1SW salmon and 9 MSW salmon were obtained at the fence. Angling catch below the fence was 251 1SW salmon kept and 7 MSW salmon hooked and released. The angling season began before the fence was in place and continued after it was removed, June 4 - September 5. Of the 251 1SW salmon angled below the fence, 20 were taken before the fence was in place and none after removal. Of the 123 1SW salmon caught above the fence, none were taken before fence installation and 15 after removal. No MSW salmon were hooked and released before the fence was installed or after the fence was removed (Table 32).

To estimate the portion of the run that may have been missed before and after fence operations, data from angling seasons beginning Victoria Day weekend and ending September 21 were used (Moores 1976 Moore et. al 1977; Moores and Tucker 1978). These data are summarized in Table 33. It should be noted that these are likely maximum estimates as no fish were angled above the fence site prior to installation and peak of angling below fence occurred two weeks before arrival at fence (Table 32).

Total returns to Fischells Brook may be determined as below:

	1SW	MSW
Angling below fence	251	(7) HR
Adjusted fence returns	685	20
Total returns	936	20

Spawners may be determined as follows:

	1SW	MSW
Adjusted fence returns	685	20
Angling above fence	123	0
Spawners	562	20

For a total number of spawners equal to 582 fish.

Spawning requirements for Fischells Brook are 2,137 fish (Porter and Chadwick 1983). Hence escapement is 27% of spawning requirements. Exploitation rate may be calculated as angled fish/returns; 374/936=0.40.

Densities of 1+ parr are highest on Harrys River in the upper portions of the system (Fig. 3) (i.e. above Gallants community site 6). This trend was evident in both 1987 and 1988. However, at only one of these sites, Pinchgut 12, were 1+ parr densities above 24/100 m^2 (Table 34). Mean 1+ parr densities for these sites in 1987 were 5.6/100 m^2 and in 1988 for the same sites 9.9/100 m^2 (13.4/100 m^2 for all sites).

Densities of 0+ salmon were also highest in upper portions of the watershed (Table 34). Mean densities for these sites in 1987 were 26.5/100 m2 and in 1988 for the same sites 23.7/100 m2 (18.1/100 m2 for all sites).

These densities are lower than Elson's (1975) egg deposition rates 240/100 m2 and 1+ parr 24/100 m2. These low values suggest that spawning requirements have not been met in Harrys River in recent years.

Data from Fischells Brook and Harrys River could be applied to an assessment of Area K if their stocks are representative of the trends for the area. Angling catch at Fischells and Harrys River for both 1SW and MSW salmon was found to be significantly correlated with angling catch for Area K. These relationships were investigated by subtracting 1SW and MSW catches of these rivers (Tables 35, 36) from Area K catches (Table 24) and regressing the remaining Area K catches on 1SW, MSW and total catches at Fischells Brook and Harrys River. Each of these regressions was significant $p < 0.0001$ (Table 37; Fig. 4). In addition, the proportion of catches accounted for by each river is similar to the drainage area for each river (Table 37), but more so for Fischells than Harrys. Hence, it may be assumed that spawning escapement in these rivers is representative of Area K.

FORECASTS

Numbers of large salmon taken in the commercial fishery of Section 50 were forecast to be 12,932 for 1988. The actual catch was 4,581 large salmon. A regression of small salmon year i to predict large salmon year i+1 is still significant for Section 50. This regression forecasts a large salmon catch of 8,566 for 1989 (Fig. 5). This catch would be above five (6110) and ten (6588) year means.

Commercial and sport catches of small and 1SW salmon in Areas M+N (year i+1) were forecast using Western Arm Brook smolts (year i). Areas M+N accounted for 73% of the small commercial catch and 78% of the 1SW sport catch in SFA 14. This regression is significant only if 1984-1985 are removed (Fig. 6). The forecast for Areas M+N is 22,117 small and 1SW salmon and is above the five (18,047) and ten (19,734) year means.

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Table 1. Boundaries of Management Zones, Statistical Areas and Statistical Sections, Gulf Region, Newfoundland and Labrador.

Management Zone	Statistical Area	Statistical Section	Boundary
12	J_2	38	Burgeo to Rose Blanche Point (commercial fishery)
12	J_2	38	Cinq Cerf Brook to Rose Blanche Point (recreational fishery)
12	J2	39	Rose Blanche Point to Cape Ray
13	K	40	Cape Ray to Sandy Point
13	K	41	Sandy Point to Cape St. George
13	L	42	Cape St. George to Long Point
13	L	43	Long Point to Bluff Head
13	L	44	Bluff Head to Cape St. Gregory
14	M	45	Cape St. Gregory to Martins Point
14	M	46	Martins Point to Daniels Harbour
14	M	47	Daniels Harbour to Point Riche
14	N	48	Point Riche to Ferrole Point
14	N	49	Ferrole Point to Cape Norman
14	A	01	Cape Norman to Cape Bauld
14	O	50	Blanc Sablon to Cape Charles

Table 2. Map index and drainage area of Gulf Region, Newfoundland and Labrador rivers.

MAP #	RIVER NAME	DRAINAGE AREA (km2)
Statistical Area J_2		
1	East Bay Brook	57
2	LaPoile River	588
3	Farmer's Arm River	89
4	Garia River	228
5	Northwest Brook, Garia Bay	119
6	Burnt Island River	273
7	Isle aux Mort River	214
8	Grand Bay River	134
9	Northwest Brook, Grand Bay	65
10	Barachoix Brook, Cape Ray	49
Statistical Area K		
11	Bear Cove river	30
12	Little Codroy River	224
13	Grand Codroy River	956
14	Highlands River	183
15	Crabbe's River	551
16	Barachois River	241
17	Robinson's River	439
18	*Fischell's Brook	360
19	Flat Bay Brook	635
20	Little Barachois Brook	354
21	Southwest and Bottom Brooks	814
22	Harry's River	816
Statistical Area L		
23	Fox Island River	194
24	Serpentine River	433
25	Cook's Brook	101
26	Humber River	7,679
27	*Hughes Brook	132
28	Goose Arm River	212
Statistical Area M		
29	Trout River	254
30	*Lomond River	470
31	Deer Arm River	126

Table 2 (continued)

32	*Western Brook	192
33	Parson's Pond River	389
34	Portland Creek	985
35	River of Ponds	861
36	Little Brook Ponds	76
37	*Torrent River	619
38	East River, Hawkes Bay	136
39	Castor River	544
Statistical Area N		
40	St. Genevieve River	318
41	*West River, St. Barbe (Western Arm Brook)	149
42	East River, St. Barbe	43
43	Eddies Cove Brook	90
44	Big Brook	212
45	Watson's Brook	95
Statistical Area A (01)		
46	Pincent's Brook	65
47	Parker River	46
48	Bartlett's Brook	40
49	Upper Brook	39
50	East River, Pistolet Bay	61
Statistical Area O (50)		
51	Forteau River	389
52	L'Anse-au-Loup Brook	130
53	Pinware River	2,486

* Indicates river with a fishway or counting fence.

Table 3. 1988 recreational salmon seasons and closure dates due to low water levels for Gulf Region, Newfoundland and Labrador scheduled rivers. Names in parentheses refer to river segments.

RIVER NAME	QUOTA[1]	Season Open	Season Closed	Closure Dates
SFA 12				
Statistical Area J2				
East Bay Brook		June 11	Sept. 5	no closures
La Poile River		June 11	Sept. 5	no closures
Farmer's Arm River		June 11	Sept. 5	no closures
Garia River		June 11	Sept. 5	no closures
Northwest Brook, Garia Bay		June 11	Sept. 5	no closures
Burnt Island River		June 11	Sept. 5	no closures
Isle Aux Morts River		June 11	Sept. 5	no closures
Grand Bay River		June 11	Sept. 5	no closures
Northwest Brook, Grand Bay		June 4	Sept. 5	no closures
Barachoix Brook, Cape Ray		not scheduled		
SFA 13				
Statistical Area K				
Bear Cove Brook		June 4	Sept. 5	no closures
Little Codroy River		June 25	Sept. 5	no closures
Grand Codroy River (Main)		June 4	Sept. 5	no closures
Grand Codroy River (South)		June 4	Sept. 5	no closures
Grand Codroy River (North)		June 4	Sept. 5	no closures
Highlands River		closed		
Crabbes River		June 4	Sept. 5	no closures
[2]Barachois River	175	June 4	Sept. 5	Aug. 17 - Sept. 5
Robinsons River		June 4	Sept. 5	no closures
Fischells Brook		June 4	Sept. 5	no closures
Flat Bay Brook	300	June 4	Sept. 5	no closures
Little Barachois Brook		June 25	Sept. 5	no closures
Southwest and Bottom Brooks		June 4	Sept. 5	no closures
[2]Harry's River (Low. & Mid.)	350	June 25	Sept. 5	Aug. 22 - Sept. 5
Harry's River (Pinchgut)		June 25	Sept. 5	Aug. 22 - Sept. 5
Harry's River (Home Pool)		June 25	Sept. 5	Aug. 22 - Sept. 5
Harry's River (Stag Pond)		June 25	Sept. 5	Aug. 22 - Sept. 5
Statistical Area L				
[2]Fox Island River	50	June 18	Sept. 5	July 18 - Sept. 5
[2]Serpentine River (Lower)	100	June 18	Sept. 5	July 26 - Sept. 5
Serpentine River (Upper)		June 18	Sept. 5	July 26 - Sept. 5
Cook's Brook		July 2	Aug. 1	no closures
[3]Humber River (Lower)		June 4	Sept. 5	Aug. 27 - Sept. 5
[4]Humber River (Deer Lake)		June 4	Sept. 5	no closures
Humber River (Little Falls)		June 4	Sept. 11	no closures
Humber River (Big Falls)		June 4	Sept. 11	no closures

(continued on next page)

Table 3 (continued)

Humber River (Adies Stream)		June 4	Sept. 11	no closures
Humber River (Adies Lake)		June 4	Sept. 5	no closures
Humber River (Harriman's)		June 4	Sept. 11	no closures
Humber River (Taylor's Bk.)		June 4	Sept. 5	no closures
Huges Brook		closed		
Goose Arm River		June 25	Sept. 5	no closures
SFA 14				
Statistical Area M				
Trout River		June 18	Sept. 5	no closures
[2]Lomond River	350	June 4	Sept. 5	July 26 - Sept. 5
Deer Arm River		June 18	Aug. 11	no closures
Western Brook		closed		
Parsons Pond River		June 18	Sept. 5	no closures
Portland Creek (Main)		June 18	Sept. 11	no closures
Portland Creek (Upper)		June 18	Sept. 11	no closures
Portland Creek Feeder		June 18	Sept. 5	no closures
River of Ponds (Lower)		June 18	Sept. 5	no closures
River of Ponds (Upper)		June 18	Sept. 5	no closures
River of Ponds (Bluey)		June 18	Sept. 5	no closures
Little Brook Ponds		June 18	Sept. 5	no closures
[5]Torrent River		July 25	Sept. 5	no closures
East River, Hawkes Bay		June 18	Sept. 5	no closures
Statistical Area N				
Castor River		June 18	Sept. 5	no closures
St. Genevieve River (Lower)		June 4	Sept. 5	no closures
St. Genevieve River (Falls)		June 4	Sept. 5	no closures
St. Genevieve River (Upper)		June 4	Sept. 5	no closures
[3]West River, St. Barbe (WAB)		June 18	Sept. 5	Aug. 4 - Sept. 5
East River, St. Barbe		June 18	Sept. 5	no closures
Eddies Cove Brook		not schedules		
Big Brook (Lower)		June 18	Sept. 5	no closures
Big Brook (Upper)		June 18	Sept. 5	no closures
[2]Watson's Brook	50	June 18	Sept. 5	Aug. 19 - Sept. 5
Statistical Area A (01)				
Pincent's Brook	10	July 18	Sept. 5	no closures
Parker River		July 1	Sept. 5	no closures
Barlett's Brook		June 18	Sept. 5	no closures
Upper Brook		June 18	Sept. 5	no closures
East River, Pistolet Bay		June 18	Sept. 5	no closures

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Table 3 (continued)

Statistical Area O (50)

Forteau River	June	4	Sept. 11	no closures
L'Anse-au-Loup Brook	June	4	Sept. 11	no closures
Pinware River	June	4	Sept. 11	no closures

1 Quotas apply to the total catch of one-sea-winter salmon on all river segments.
2 Quota taken.
3 Closed due to low water.
4 North Brook closed to angling due to salmon enhancement project.
5 River open to angling after 1000 salmon had passed through the fishway.

Table 4. Percentage changes in commercial fisheries West Newfoundland and Southern Labrador, Gulf Region.

Zone	Size	Percentage Change 1988-1987	1988-Five Year Mean	1988-Ten Year Mean
* Region	Small	9	55	57
	Large	-34	-8	-55
	Total	-2	39	10
SFA 13	Small	27	72	95
	Large	1	14	32
	Total	23	62	84
Area K	Small	28	90	108
	Large	-5	22	45
	Total	22	76	95
Area L	Small	23	46	75
	Large	24	-7	3
	Total	23	39	64
SFA 14	Small	-6	50	39
	Large	-46	-16	-20
	Total	-18	29	20
Area M	Small	6	82	64
	Large	-14	46	86
	Total	3	76	67
Area N	Small	27	63	37
	Large	-24	-15	-28
	Total	20	52	27
Area A	Small	-33	3	9
	Large	-12	43	15
	Total	-29	9	10
Area O	Small	-35	9	11
	Large	-56	-32	-37
	Total	-45	-11	-14

*Five year mean 1984-87
Ten year mean 1978-83 because of J_2 closure in 84.

Table 5. Percentage of small and large salmon by number caught in Gulf Region commercial fisheries by Area since 1985.

Area	small				large			
	1985	1986	1987	1988	1985	1986	1987	1988
SFA 12 (J2)	--	--	--	--	--	--	--	--
SFA 13	46	58	41	52	64	43	25	38
Area K	30	29	26	35	46	30	20	29
Area L	16	29	14	18	18	13	5	9
SFA 14	54	42	59	48	36	57	75	62
Area M	21	8	20	22	11	9	14	18
Area N	19	17	19	13	6	12	5	6
Area O (50)	12	16	18	12	18	34	55	37
Area A (01)	3	2	2	1	0	2	1	2

Table 6. Mean commercial catches (numbers) for five years preceeding and five years during PLAN.

Zone	Size	Mean PRE-PLAN 1979-1983	Mean PLAN 1984-1988	PLAN[1] W/087	Percent Change PLAN - PRE-PLAN	Percent[1] change W/087
[2]Region	Small	41,298	44,834	40,570	8	-2
	Large	26,737	13,257	11,862	-50	-55
	Total	68,035	56,928	52,432	-16	-23
SFA 13	Small	14,576	22,309	21,609	53	48
	Large	2,802	4,470	4,423	60	58
	Total	17,379	26,779	26,031	54	50
Area K	Small	9,495	13,618	12,931	43	36
	Large	1,916	3,220	3,078	68	61
	Total	11,411	16,838	16,009	48	40
Area L	Small	5,082	8,691	8,678	71	71
	Large	887	1,250	1,345	41	52
	Total	5,969	9,941	10,023	67	68
SFA 14	Small	23,282	22,525	18,962	-3	-19
	Large	9,473	8,787	7,439	-7	-21
	Total	32,755	30,149	26,401	-8	-19
Area M	Small	9,701	7,360	6,058	-24	-38
	Large	1,104	1,637	1,408	48	28
	Total	10,805	8,997	7,466	-17	-31
Area N	Small	6,908	7,077	5,839	2	-15
	Large	1,107	893	880	-19	-21
	Total	8,014	6,807	6,719	-15	-16
Area A	Small	555	838	745	51	34
	Large	196	147	127	-25	-35
	Total	751	985	873	31	16
Area O	Small	6,119	7,251	6,320	18	3
	Large	7,066	6,110	5,024	-14	-29
	Total	13,186	13,360	11,344	1	-14

[1] 1987 was removed for part of this analyses because of possible effects of low water in 1987.

[2] Commercial fishery closed in SFA 12 since 1984.

Table 7. Commercial landings of small salmon and large salmon in the Gulf Region, Newfoundland and Labrador, 1975-88. Weight in kilograms. * Area J_2 fishery closed 1984-88, thus years 1984-88 not directly comparable with earlier years.

Year	Small weight	Small number	Large weight	Large number	Total weight	Total number	Percent small(wt)	Percent small(no.)
1975	108,171	59,538	224,689	49,730	332,860	109,268	32.50	54.49
1976	122,415	65,576	308,181	67,266	430,596	132,842	28.43	49.36
1977	63,982	33,723	272,365	58,321	336,347	92,044	19.02	36.64
1978	47,570	26,626	151,961	32,003	199,531	58,629	23.84	45.41
1979	79,540	42,464	87,527	20,452	167,067	62,916	47.61	67.49
1980	102,291	49,306	178,753	36,656	281,044	85,962	36.40	57.36
1981	73,530	40,480	138,613	28,326	212,143	68,806	34.66	58.83
1982	71,919	38,809	111,580	25,059	183,499	63,868	39.19	60.76
1983	62,778	35,429	101,607	23,190	164,385	58,619	38.19	60.44
1984*	43,423	23,287	54,838	11,610	98,261	34,897	45.58	66.73
1985*	46,930	26,879	33,433	7,775	80,363	30,654	58.40	87.69
1986*	89,668	51,216	68,973	15,675	158,641	66,891	56.52	76.57
1987*	111,140	61,891	86,748	18,840	197,888	80,731	58.88	76.67
1988*	113,187	60,898	59,138	12,387	172,325	73,285	65.68	83.10
1984-87								
Mean	72,790.00	41,068.00	60,998.00	13,475.00	133,788.00	53,293.00	53.82	76.92
S.D.	33,100.00	16,674.00	22,542.00	4,816.00	54,292.00	24,417.80	8.56	4.93
n	4	4	4	4	4	4	4	4
1978-83								
Mean	72,938.00	38,852.00	128,340.00	27,614.00	201,278.00	66,467.00	36.65	58.38
S.D.	18,185.00	7,565.00	34,252.00	3,982.00	43,201.00	10,275.00	7.71	7.24
n	6	6	6	6	6	6	6	6

Table 8. Commercial landings of small salmon and large salmon in Salmon Fishing Area 12, Gulf Region, Newfoundland and Labrador, 1975-88. Weight in kilograms.

Year	Small weight	Small number	Large weight	Large number	Total weight	Total number	Percent small(wt)	Percent small(no.)
1975	45,925	28,123	128,045	27,406	173,970	55,529	26.40	50.65
1976	45,693	27,226	203,939	44,515	249,632	71,741	18.30	37.95
1977	7,774	4,394	127,121	28,026	134,895	32,420	5.76	13.55
1978	1,435	652	75,070	15,640	76,505	16,292	1.88	4.00
1979	3,083	1,623	56,174	11,952	59,257	13,575	5.20	11.96
1980	14,899	7,385	93,584	19,253	108,483	26,638	13.73	27.72
1981	4,591	2,485	76,247	15,723	80,838	18,208	5.68	13.65
1982	3,931	2,108	64,933	14,734	68,864	16,842	5.71	12.52
1983	6,652	3,593	46,694	10,644	53,346	14,237	12.47	25.24
1984	---	---	---	---	---	---	---	---
1985	---	---	---	---	---	---	---	---
1986	---	---	---	---	---	---	---	---
1987	---	---	---	---	---	---	---	---
1988	---	---	---	---	---	---	---	---
1975-83								
Mean	14,887.00	8,621.00	96,867.44	20,877.00	111,754.44	29,498.00	10.57	21.92
S.D.	17,948.22	10,975.52	49,315.17	10,789.03	64,838.89	20,698.06	7.90	14.89
n	9	9	9	9	9	9	9	9

Table 9. Commercial landings of small salmon and large salmon in Salmon Fishing Area 13, Gulf Region, Newfoundland and Labrador, 1975–88. Weight in kilograms.

Year	Small weight	Small number	Large weight	Large number	Total weight	Total number	Percent small(wt)	Percent small(no.)
1975	17,900	9,411	10,660	2,094	28,560	11,505	62.68	81.80
1976	26,918	13,383	18,223	4,077	45,141	17,460	59.63	76.65
1977	20,637	10,907	32,941	6,955	53,578	17,862	38.52	61.06
1978	16,795	10,052	16,766	3,785	33,561	13,837	50.04	72.65
1979	27,017	14,229	5,308	1,156	32,325	15,385	83.58	92.49
1980	40,230	19,554	24,826	5,234	65,056	24,788	61.84	78.88
1981	27,232	15,327	10,714	2,260	37,946	17,587	71.77	87.15
1982	19,742	11,341	11,188	2,425	30,930	13,766	63.83	82.38
1983	20,336	12,431	12,227	2,936	32,563	15,367	62.45	80.89
1984	27,274	14,832	15,120	3,294	42,394	18,126	64.33	81.83
1985	18,612	10,144	13,662	2,998	32,274	13,142	57.67	77.19
1986	51,465	29,675	27,859	6,704	79,324	36,379	64.88	81.57
1987	44,527	25,110	21,169	4,660	65,696	29,770	73.12	84.35
1988	56,432	31,783	21,797	4,695	78,229	36,478	72.14	87.13
1983-87								
Mean	32,443.00	18,438.00	18,007.00	4,118.00	50,450.00	22,557.00	63.42	81.17
S.D.	14,769.00	8,495.00	6,475.00	1,606.00	21,103.00	10,038.00	3.74	2.58
n	5	5	5	5	5	5	5	5
1978-87								
Mean	29,323.00	16,270.00	15,884.00	3,545.00	45,207.00	19,815.00	64.82	81.94
S.D.	12,012.00	6,591.00	6,925.00	1,615.00	17,860.00	7,904.00	8.78	5.42
n	10	10	10	10	10	10	10	10

Table 10. Commercial landings of small salmon and large salmon in Statistical Area K, Gulf Region, Newfoundland and Labrador, 1975-88. Weight in kilograms.

Year	Small weight	Small number	Large weight	Large number	Total weight	Total number	Percent small(wt)	Percent small(no.)
1975	12,147	6,529	7,452	1,400	19,599	7,929	61.98	82.34
1976	21,375	10,474	16,365	3,680	37,740	14,154	56.64	74.00
1977	15,354	8,530	26,111	5,534	41,465	14,064	37.03	60.65
1978	10,392	6,495	13,023	2,894	23,415	9,389	44.38	69.18
1979	19,441	10,242	4,012	868	23,453	11,110	82.89	92.19
1980	24,030	11,441	16,070	3,416	40,100	14,857	59.92	77.01
1981	18,923	11,097	6,937	1,573	25,860	12,670	73.17	87.58
1982	10,425	6,466	6,477	1,432	16,902	7,898	61.68	81.87
1983	12,440	8,228	9,063	2,289	21,503	10,517	57.85	78.24
1984	16,335	9,075	8,156	1,812	24,491	10,887	66.70	83.36
1985	11,903	6,613	9,731	2,162	21,634	8,775	55.02	75.36
1986	24,657	15,024	19,689	4,718	44,346	19,742	55.60	76.10
1987	27,887	16,365	17,239	3,790	45,126	20,155	61.80	81.20
1988	34,958	21,012	17,174	3,618	52,132	24,630	67.06	85.31
1983-87								
Mean	18,644.00	11,061.00	12,776.00	2,954.00	31,420.00	14,015.00	59.39	78.85
S.D.	1,106.00	4,347.00	5,294.00	1,243.00	12,217.00	5,477.00	4.88	3.39
n	5	5	5	5	5	5	5	5
1978-87								
Mean	17,643.00	10,105.00	11,040.00	2,495.00	28,683.00	12,600.00	61.90	80.21
S.D.	6,379.00	3,484.00	5,201.00	1,196.00	10,364.00	4,343.00	10.57	6.56
n	10	10	10	10	10	10	10	10

Table 11. Commercial landings of small salmon and large salmon in Statistical Area L, Gulf Region, Newfoundland and Labrador, 1975-88. Weight in kilograms.

Year	Small weight	Small number	Large weight	Large number	Total weight	Total number	Percent small(wt)	Percent small(no.)
1975	5,753	2,882	3,208	694	8,961	3,576	64.20	80.59
1976	5,543	2,909	1,858	397	7,401	3,306	74.90	87.99
1977	5,283	2,377	6,830	1,421	12,113	3,798	43.61	62.59
1978	6,403	3,557	3,743	891	10,146	4,448	63.11	79.97
1979	7,576	3,987	1,296	288	8,872	4,275	85.39	93.26
1980	16,200	8,113	8,756	1,818	24,956	9,931	64.92	81.69
1981	8,309	4,230	3,777	687	12,086	4,917	68.75	86.03
1982	9,317	4,875	4,711	993	14,028	5,868	66.42	83.08
1983	7,896	4,203	3,164	647	11,060	4,850	71.39	86.66
1984	10,939	5,757	6,964	1,482	17,903	7,239	61.10	79.53
1985	6,709	3,531	3,931	836	10,640	4,367	63.05	80.86
1986	26,808	14,651	8,170	1,986	34,978	16,637	76.64	88.06
1987	16,640	8,745	3,930	870	20,570	9,615	80.89	90.95
1988	21,474	10,771	4,623	1,077	26,097	11,848	82.29	90.91
1983-87								
Mean	13,798.00	7,377.00	5,232.00	1,164.00	19,030.00	8,542.00	70.61	85.21
S.D.	8,225.00	4,535.00	2,196.00	556.00	9,898.00	4,986.00	8.52	4.86
n	5	5	5	5	5	5	5	5
1978-87								
Mean	11,680.00	6,165.00	4,844.00	1,050.00	16,524.00	7,215.00	70.17	85.00
S.D.	6,456.00	3,502.00	2,364.00	541.00	8,297.00	3,930.00	8.28	4.76
n	10	10	10	10	10	10	10	10

Table 12. Commercial landings of small salmon and large salmon in Salmon Fishing Area 14, Gulf Region, Newfoundland and Labrador, 1975-88. Weight in kilograms.

Year	Small weight	Small number	Large weight	Large number	Total weight	Total number	Percent small(wt)	Percent small(no.)
1975	44,346	22,004	85,984	20,230	130,330	42,234	34.03	52.10
1976	49,804	24,967	86,019	18,674	135,823	43,641	36.67	57.21
1977	35,571	18,422	112,303	23,240	147,874	41,662	24.05	44.22
1978	29,340	15,922	60,125	12,578	89,465	28,500	32.79	55.87
1979	49,440	26,612	26,045	7,344	75,485	33,956	65.50	78.37
1980	47,162	22,367	60,343	12,169	107,505	34,536	43.87	64.76
1981	41,707	22,668	51,652	10,343	93,359	33,011	44.67	68.67
1982	48,246	25,360	35,459	7,900	83,705	33,260	57.64	76.25
1983	35,790	19,405	42,686	9,610	78,476	29,015	45.61	66.88
1984	16,149	8,455	39,718	8,316	55,867	16,771	28.91	50.41
1985	28,318	16,735	19,771	4,777	48,089	21,512	58.89	77.79
1986	38,203	21,541	41,114	8,971	79,317	30,512	48.16	70.60
1987	66,613	36,781	65,579	14,180	132,192	50,961	50.39	72.17
1988	56,755	29,115	37,341	7,692	94,096	36,807	60.32	79.10
1983-87								
Mean	37,015.00	20,583.40	41,774.00	9,171.00	78,788.00	29,754.20	46.39	67.57
S.D.	18,641.00	10,326.86	16,250.00	3,368.00	32,864.00	10,813.00	10.97	10.09
n	5	5	5	5	5	5	5	5
1978-87								
Mean	40,097.00	21,584.60	44,249.00	9,619.00	84,346.00	31,203.40	47.64	68.18
S.D.	13,982.00	7,490.49	15,134.00	2,794.00	24,031.00	9,014.41	11.31	9.21
n	10	10	10	10	10	10	10	10

Table 13. Commercial landings of small salmon and large salmon in Statistical Area M, Gulf Region, Newfoundland and Labrador, 1975-88. Weight in kilograms.

Year	Small weight	Small number	Large weight	Large number	Total weight	Total number	Percent small(wt)	Percent small(no.)
1975	4,409	2,444	12,591	2,444	17,000	4,888	25.94	50.00
1976	20,152	10,559	8,701	1,858	28,853	12,417	69.84	85.04
1977	5,475	3,010	12,902	2,840	18,377	5,850	29.79	51.45
1978	16,577	9,209	1,296	282	17,873	9,491	92.75	97.03
1979	25,035	13,908	1,205	241	26,240	14,149	95.41	98.30
1980	13,351	6,668	7,646	1,651	20,997	8,318	63.58	71.55
1981	13,290	8,300	5,866	1,227	19,156	9,527	69.38	87.12
1982	12,115	6,528	4,116	887	16,231	7,415	74.64	88.04
1983	23,551	13,100	6,804	1,515	30,355	14,615	77.59	89.63
1984	4,247	2,359	6,892	1,436	11,139	3,795	38.13	62.16
1985	8,274	4,597	2,466	514	10,740	5,111	77.04	89.94
1986	7,171	3,952	6,219	1,486	13,390	5,438	53.55	72.67
1987	23,483	12,566	10,916	2,553	34,399	15,119	68.27	83.11
1988	26,052	13,324	10,219	2,196	36,271	15,520	71.83	85.85
1983-87								
Mean	13,345.00	7,315.00	6,659.00	1,500.00	20,005.00	8,816.00	62.92	79.50
S.D.	9,401.00	5,106.00	2,999.00	722.00	11,429.00	5,561.00	19.92	11.96
n	5	5	5	5	5	5	5	5
1978-87								
Mean	14,709.00	8,119.00	5,343.00	1,179.00	20,052.00	9,298.00	71.04	84.82
S.D.	7,330.00	4,040.00	3,077.00	715.00	8,041.00	4,123.00	12.04	10.96
n	10	10	10	10	10	10	10	10

Table 14. Commercial landings of small salmon and large salmon in Statistical Area N, Gulf Region, Newfoundland and Labrador, 1975-88. Weight in kilograms.

Year	Small weight	Small number	Large weight	Large number	Total weight	Total number	Percent small(wt)	Percent small(no.)
1975	8,151	3,667	2,753	493	10,904	4,160	74.75	88.15
1976	8,114	4,258	1,141	244	9,255	4,502	87.67	94.58
1977	7,117	3,922	6,492	1,431	13,609	5,353	52.30	73.27
1978	2,283	1,268	2,894	643	5,177	1,911	44.10	66.35
1979	12,625	6,814	1,420	1,771	14,045	8,585	89.89	79.37
1980	14,341	6,926	5,487	1,164	19,828	8,090	72.33	85.61
1981	14,082	7,370	5,670	1,179	19,752	8,549	71.29	86.21
1982	20,736	11,002	3,770	969	24,506	11,971	84.62	91.91
1983	4,600	2,426	1,897	450	6,497	2,876	70.80	84.35
1984	5,472	2,880	2,916	648	8,388	3,528	65.24	81.63
1985	7,815	4,113	1,339	298	9,154	4,411	85.37	93.24
1986	15,235	8,489	7,572	1,858	22,807	10,347	66.80	82.04
1987	21,114	12,030	4,144	947	25,258	12,977	83.59	92.70
1988	13,995	7,873	3,482	716	17,477	8,589	80.08	96.66
1983-87								
Mean	10,847.00	5,987.60	3,574.00	840.00	14,421.00	6,827.80	74.36	86.79
S.D.	7,102.00	4,141.98	2,477.00	619.00	8,870.00	4,542.68	9.48	5.74
n	5	5	5	5	5	5	5	5
1978-87								
Mean	11,830.00	6,331.80	3,711.00	993.00	15,541.00	7,324.50	73.40	84.34
S.D.	6,575.00	3,626.03	2,043.00	520.00	7,797.00	3,920.71	13.44	7.98
n	10	10	10	10	10	10	10	10

Table 15. Commercial landings of small salmon and large salmon in Statistical Area A(01), Gulf Region, Newfoundland and Labrador, 1975-88. Weight in kilograms.

Year	Small weight	Small number	Large weight	Large number	Total weight	Total number	Percent small(wt)	Percent small(no.)
1975	1,616	808	810	176	2,426	984	66.62	82.11
1976	895	320	762	177	1,657	497	54.01	64.39
1977	871	436	1,055	224	1,926	660	45.22	66.06
1978	2,696	1,348	997	208	3,693	1,556	73.00	86.63
1979	2,231	1,115	839	200	3,070	1,315	72.67	84.79
1980	594	280	1,042	216	1,636	496	36.31	56.45
1981	654	340	1,631	331	2,285	671	28.62	50.67
1982	860	451	378	78	1,238	529	69.46	85.26
1983	1,059	587	720	156	1,779	743	59.53	79.00
1984	1,589	795	66	14	1,655	809	96.01	98.27
1985	1,130	565	50	11	1,180	576	95.76	98.09
1986	1,195	804	1,120	285	2,315	1,089	51.62	73.83
1987	2,140	1,210	1,205	227	3,345	1,437	63.98	84.20
1988	1,708	816	1,074	199	2,782	1,015	61.39	80.39
1983-87								
Mean	1,423.00	792.00	632.00	139.00	2,055.00	931.00	73.38	86.68
S.D.	451.00	259.00	555.00	124.00	827.00	338.00	21.02	11.12
n	5	5	5	5	5	5	5	5
1978-83								
Mean	1,414.00	750.00	805.00	173.00	2,219.00	922.00	64.67	79.72
S.D.	722.00	372.00	510.00	108.00	886.00	396.00	22.18	15.73
n	10	10	10	10	10	10	10	10

Table 16. Commercial landings of small salmon and large salmon in Statistical Area 0(50), Gulf Region, Newfoundland and Labrador, 1975-88. Weight in kilograms.

Year	Small weight	Small number	Large weight	Large number	Total weight	Total number	Percent small(wt)	Percent small(no.)
1975	30,170	15,085	69,830	14,857	100,000	29,942	30.17	50.38
1976	20,643	9,830	75,415	16,395	96,058	26,225	21.49	37.48
1977	22,108	11,054	91,851	18,745	113,959	29,799	19.40	37.10
1978	7,784	4,097	54,938	11,445	62,722	15,542	12.41	26.36
1979	9,549	4,775	22,581	5,132	32,130	9,907	29.72	48.20
1980	18,877	8,493	46,168	9,138	65,045	17,631	29.02	48.17
1981	13,681	6,658	38,485	7,606	52,166	14,264	26.23	46.68
1982	14,535	7,379	27,195	5,966	41,730	13,345	34.83	55.29
1983	6,580	3,292	33,265	7,489	39,845	10,781	16.51	30.54
1984	4,841	2,421	29,844	6,218	34,685	8,639	13.96	28.02
1985	11,099	7,460	15,916	3,954	27,015	11,414	41.08	65.36
1986	14,602	8,296	26,203	5,342	40,805	13,638	35.78	60.83
1987	19,876	10,975	49,314	10,453	69,190	21,428	28.73	51.22
1988	15,000	7,102	22,566	4,581	37,566	11,683	39.93	60.79
1983-87								
Mean	11,400.00	6,489.00	30,908.00	6,691.00	42,308.00	13,180.00	27.21	47.19
S.D.	6,092.00	3,574.00	12,169.00	2,466.00	15,992.00	4,943.00	11.82	17.15
n	5	5	5	5	5	5	5	5
1978-87								
Mean	12,142.00	6,385.00	34,391.00	7,274.00	46,533.00	13,659.00	26.83	46.07
S.D.	5,059.00	2,677.00	12,569.00	2,434.00	14,830.00	3,841.00	9.69	13.61
n	10	10	10	10	10	10	10	10

Table 17. Percentage changes in sports fisheries West Newfoundland and Southern Labrador, Gulf Region.

Zone	Size	Percentage Change 1988-1987	1988-Five Year Mean	1988-Ten Year Mean
Region	1SW	31	30	25
	MSW	36	21	2
	Total	31	30	24
SFA 12	1SW	70	30	41
	MSW	-15	-30	-12
	Total	68	28	40
SFA 13	1SW	37	25	16
	MSW	19	-8	-25
	Total	36	23	13
Area K	1SW	37	10	5
	MSW	6	-33	-43
	Total	34	6	0
Area L	1SW	36	43	28
	MSW	40	76	26
	Total	37	44	27
SFA 14	1SW	21	35	34
	MSW	65	85	60
	Total	22	37	35
Area M	1SW	37	51	53
	MSW	380	185	140
	Total	41	54	55
Area N	1SW	30	28	11
	MSW	-50	-50	-83
	Total	29	28	10
Area O	1SW	-16	13	28
	MSW	17	54	43
	Total	-12	17	30
Area A	1SW	105	61	61
	MSW	N/C	N/C	-100
	Total	105	60	60

Table 18. Percentage of 1SW and MSW salmon caught in Gulf Region recreational fisheries by Area since 1985.

	1SW				MSW			
Area	1985	1986	1987	1988	1985	1986	1987	1988
SFA 12 (J2)	10	7	6	8	7	3	4	3
SFA 13	48	51	45	47	62	69	54	48
Area K	26	27	21	22	59	43	34	27
Area L	22	25	23	25	3	26	20	21
SFA 14	42	42	49	45	31	28	42	50
Area M	20	23	22	23	6	10	6	20
Area N	12	11	13	12	0	0	1	0
Area O (50)	10	7	14	9	24	18	35	29
Area A (01)	1	1	1	1	0	0	0	0

Table 19. Mean angling catches for five years preceeding and five years during PLAN.

Zone	Size	PRE-PLAN 1979-1983	PLAN 1984-1988	PLAN W/087	Percent Change	Percent Change W/087
Region	1SW	15,107	14,377	14,633	-5	-3
	MSW	898	710	732	-21	-18
	Total	16,005	15,087	15,364	-6	-4
SFA 12	1SW	967	1,240	1,343	28	39
	MSW	16	36	39	125	144
	Total	983	1,276	1,381	30	40
SFA 13	1SW	7,825	6,931	7,159	-11	-9
	MSW	595	401	416	-33	-30
	Total	8,420	7,332	7,575	-13	-10
Area K	1SW	3,963	3,636	3,843	-8	-3
	MSW	456	277	292	-39	-36
	Total	4,419	3,193	4,135	-28	-6
Area L	1SW	3,862	3,295	3,316	-15	-14
	MSW	139	124	124	-11	-11
	Total	4,001	3,419	3,440	-15	-14
SFA 14	1SW	6,315	6,206	6,131	-2	-3
	MSW	288	273	277	-5	-4
	Total	6,602	6,479	6,409	-2	-3
Area M	1SW	2,537	3,061	3,104	21	22
	MSW	79	82	94	4	19
	Total	2,616	3,143	3,198	20	22
Area N	1SW	2,309	1,716	1,732	-26	-25
	MSW	29	4	3	-86	-90
	Total	2,338	1,720	1,735	-26	-26
Area A	1SW	107	103	110	-4	3
	MSW	2	0	0	-100	-100
	Total	109	103	110	-6	1
Area O	1SW	1,362	1,326	1,186	-3	-13
	MSW	177	187	180	6	2
	Total	1,539	1,513	1,366	-2	-11

Table 20. Recreational catch of Atlantic salmon in Gulf Region, Newfoundland and Labrador, 1953-1988.

YEAR	EFFORT ROD-DAYS	1SW <63CM	MSW >63CM	TOTAL CATCH	CPUE	PERCENT 1SW
1953	15069	6045	1754	7799	0.52	.
1954	11598	3988	1341	5329	0.46	82
1955	11247	5113	1316	6429	0.57	75
1956	19866	6743	1952	8695	0.44	72
1957	16041	9790	2567	12357	0.77	72
1958	18126	8741	2625	11366	0.63	79
1959	18968	8212	2063	10275	0.54	81
1960	18464	9012	1395	10407	0.56	85
1961	22765	9303	2132	11435	0.50	81
1962	27730	13536	1911	15447	0.56	83
1963	34554	17764	3415	21179	0.61	80
1964	37861	20521	3643	24164	0.64	83
1965	34160	17705	3012	20717	0.61	87
1966	34680	15729	2812	18541	0.53	86
1967	36391	14243	2784	17027	0.47	85
1968	37804	14820	1868	16688	0.44	88
1969	43726	20049	2294	22343	0.51	87
1970	48537	16540	2274	18814	0.39	90
1971	39630	14683	1631	16314	0.41	91
1972	38089	12191	1318	13509	0.35	92
1973	45298	17657	2191	19848	0.44	85
1974	43018	11707	1333	13040	0.30	93
1975	44896	18400	1150	19550	0.44	91
1976	54890	20559	1041	21600	0.39	95
1977	46697	14639	2162	16801	0.36	90
1978	35471	9469	1130	10599	0.30	93
1979	34528	14221	301	14522	0.42	97
1980	40183	13414	1539	14953	0.37	90
1981	47948	17940	1037	18977	0.40	93
1982	47448	17155	797	17952	0.38	96
1983	47670	12804	817	13621	0.29	95
1984	46236	15487	649	16136	0.35	95
1985	40930	(52)11169	(316)416	11585	0.28	97
1986	49245	(17)14402	(826)1010	15412	0.31	92
1987	43153	13354	(410)625	13979	0.32	96
1988	52638	17473	(600)851	18324	0.35	94
MEANS, 95% CONFIDENCE LIMITS, N'S PRECEDING 1988:						
PREV 5	45446.8	13443.2	703.4	14146.6	0.31	95.3
CL=+/-	3378.4	1634.4	276.7	1762.5	0.02	1.2
N	5	5	5	5	5	5
PREV 10	43281.2	13941.5	832.1	14773.6	0.34	94.4
CL=+/-	5327.7	2551.7	260.7	2575.2	0.03	1.6
N	10	10	10	10	10	10

Numbers in parentheses refer to hooked and released fish.
Percent 1SW is calculated by year of smolt migration.

Table 21. Recreational catches of Atlantic salmon in Gulf Region Newfoundland and Labrador river[1].

RIVER NAME	TOTAL ROD	TOTAL 1SW	TOTAL[1] MSW	TOTAL SALMON
Pincent's Brook	116	5	0	5
Parkers Brook	129	16	0	16
Bartlett's Brook	130	18	0	18
Upper Brook	255	61	0	61
East River, Pistolet Bay	313	58	0	58
La Poile River (incl. E. Bay Bk.)	710	204	7	211
Farmer's Arm River	347	205	0	205
Garia River	324	153	4	157
Northwest Brook, Garia Bay	190	45	0	45
Burnt Island River	882	410	3	413
Isle aux Morts River	789	259	3	262
Grand Bay River (incl. N.W. Bk.)	365	137	6	143
Bear Cove River	271	50	4	54
Little Codroy River	378	118	4	122
Grand Codroy River	5,158	1,399	129	1,528
Crabbe's River	773	284	17	301
Barachois River	565	202	11	213
Robinson's River	1,528	290	9	299
Fischell's Brook	840	374	7	381
Flat Bay Brook	871	249	5	254
Little Barachois Brook	325	104	2	106
Southwest and Bottom Brooks	1,607	330	31	361
Harry's River	2,077	434	11	445
Fox Island River	383	102	19	121
Serpentine River	277	188	13	201
Cook's Brook	167	16	0	16
Humber River	8,521	4,042	144	4,186
Goose Arm River	615	35	0	35
Trout River	257	0	0	0
Lomond River	1,545	404	25	429
Deer Arm River	158	20	0	20
Parsons Pond River	371	48	0	48
Portland Creek	4,044	1,137	139	1,276
River of Ponds	3,956	1,617	4	1,621
Little Brook Ponds	789	160	0	160
Torrent River	803	313	0	313
East River, Hawkes Bay	888	246	0	246
Castor River	1,445	780	0	780
St. Genevieve River	2,122	899	3	902
West River, St. Barbe	701	171	0	171
East River, St. Barbe	118	51	0	51
Big Brook	538	185	0	185
Watson's Brook	290	62	0	62
Forteau River	1,765	538	24	562
L'Anse-au-Loup Brook	981	230	2	232
Pinware River	2,961	824	225	1,049

[1] MSW = Hook and release except for Forteau, L'Anseau Loup, Pinware.

Table 22. Recreational catch of Atlantic salmon in Salmon Fishing Area 12, Gulf Region, Newfoundland and Labrador 1953-1988

YEAR	EFFORT ROD-DAYS	1SW <63CM	MSW >63CM	TOTAL CATCH	CPUE	PERCENT 1SW
1953	474	238	68	306	0.65	.
1954	380	162	36	198	0.52	87
1955	144	140	11	151	1.05	94
1956	700	275	17	292	0.42	89
1957	823	546	18	564	0.69	94
1958	1636	396	23	419	0.26	96
1959	899	428	87	515	0.57	82
1960	1526	665	14	679	0.44	97
1961	1272	514	101	615	0.48	87
1962	1449	901	67	968	0.67	88
1963	2191	1029	60	1089	0.50	94
1964	1735	924	73	997	0.57	93
1965	2175	1116	100	1216	0.56	90
1966	1489	850	65	915	0.61	94
1967	1901	553	65	618	0.33	93
1968	2274	749	75	824	0.36	88
1969	1979	928	89	1017	0.51	89
1970	1276	749	79	828	0.65	92
1971	1406	454	16	470	0.33	98
1972	1482	928	20	948	0.64	96
1973	1563	646	25	671	0.43	97
1974	1423	658	13	671	0.47	98
1975	1204	510	20	530	0.44	97
1976	926	297	5	302	0.33	99
1977	1238	558	48	606	0.49	86
1978	1303	366	20	386	0.30	97
1979	1711	733	10	743	0.43	97
1980	2175	820	29	849	0.39	96
1981	2038	1060	17	1077	0.53	98
1982	2810	1555	15	1570	0.56	99
1983	2648	667	8	675	0.25	99
1984	3590	1922	68	1990	0.55	91
1985	3722	1097	(30)	1127	0.30	98
1986	3430	938	(33)	971	0.28	97
1987	2212	829	(27)	856	0.39	97
1988	3607	1413	(23)	1436	0.40	97
MEANS, 95% CONFIDENCE LIMITS, N'S PRECEDING 1988:						
PREV 5	3120.4	1090.6	33.2	1123.8	0.36	97.4
CL=+/-	657.0	609.0	27.0	635.2	0.12	0.8
N	5	5	5	5	5	5
PREV 10	2563.9	998.7	25.7	1024.4	0.40	97.4
CL=+/-	822.0	321.8	12.3	329.9	0.08	0.8
N	10	10	10	10	10	10

Numbers in parentheses refer to hooked and released fish.
Percent 1SW is calculated by year of smolt migration.

Table 23. Recreational catch of Atlantic salmon in Salmon Fishing Area 13, Gulf Region, Newfoundland and Labrador 1953-1988

YEAR	EFFORT ROD-DAYS	1SW <63CM	MSW >63CM	TOTAL CATCH	CPUE	PERCENT 1SW
1953	12115	4507	1296	5803	0.48	.
1954	8589	2572	866	3438	0.40	84
1955	8253	3660	810	4470	0.54	76
1956	16130	4606	1449	6055	0.38	72
1957	12244	6781	1914	8695	0.71	71
1958	11765	5091	1961	7052	0.60	78
1959	13305	4871	1307	6178	0.46	80
1960	12439	6094	927	7021	0.56	84
1961	14785	5977	1227	7204	0.49	83
1962	18227	9424	1469	10893	0.60	80
1963	22261	12660	2539	15199	0.68	79
1964	26647	14346	2528	16874	0.63	83
1965	22914	10515	1929	12444	0.54	88
1966	21969	8076	1883	9959	0.45	85
1967	22219	8109	1844	9953	0.45	81
1968	22321	8365	1149	9514	0.43	88
1969	28830	12147	1624	13771	0.48	84
1970	34460	9739	1643	11382	0.33	88
1971	29028	9522	1045	10567	0.36	90
1972	27614	8401	1103	9504	0.34	90
1973	30955	10268	1392	11660	0.38	86
1974	29313	7189	916	8105	0.28	92
1975	32253	12003	886	12889	0.40	89
1976	32922	10383	626	11009	0.33	95
1977	24474	6712	1049	7761	0.32	91
1978	19686	5289	855	6144	0.31	89
1979	16383	6009	113	6122	0.37	98
1980	21313	7913	993	8906	0.42	86
1981	23839	9300	663	9963	0.42	92
1982	25246	9566	595	10161	0.40	94
1983	25473	6337	610	6947	0.27	94
1984	22152	7771	309	8080	0.36	95
1985	20137	5302	(257)	5559	0.28	97
1986	25707	7346	(691)	8037	0.31	88
1987	20887	6018	(342)	6360	0.30	96
1988	24356	8217	(406)	8623	0.35	94
MEANS, 95% CONFIDENCE LIMITS, N'S PRECEDING 1988:						
PREV 5	22871.2	6554.8	441.8	6996.6	0.31	94.3
CL=+/-	2585.6	1243.2	242.2	1350.3	0.03	2.2
N	5	5	5	5	5	5
PREV 10	22082.3	7085.1	542.8	7627.9	0.35	92.9
CL=+/-	3014.1	1106.9	200.2	1185.0	0.04	2.0
N	10	10	10	10	10	10

Numbers in parentheses refer to hooked and released fish.
Percent 1SW is calculated by year of smolt migration.

Table 24. Recreational catch of Atlantic Salmon in Statistical Area K, Gulf Region, Newfoundland and Labrador, 1953-1988.

YEAR	EFFORT ROD-DAYS	1SW <63CM	MSW >63CM	TOTAL CATCH	CPUE	PERCENT 1SW
1953	8040	3118	1066	4184	0.52	.
1954	3994	1578	670	2248	0.56	82
1955	5696	2126	617	2743	0.48	72
1956	8213	3187	1166	4353	0.53	65
1957	8720	4580	1621	6201	0.71	66
1958	7699	3172	1551	4723	0.61	75
1959	8824	2664	928	3592	0.41	77
1960	8054	3935	603	4538	0.56	82
1961	10244	3930	967	4897	0.48	80
1962	12834	6485	1133	7618	0.59	78
1963	15743	8420	2240	10660	0.68	74
1964	16849	8956	1878	10834	0.64	82
1965	14721	6127	1544	7671	0.52	85
1966	11977	3648	1450	5098	0.43	81
1967	15534	5608	1577	7185	0.46	70
1968	15114	5615	987	6602	0.44	85
1969	16025	6987	1082	8069	0.50	84
1970	19612	6153	1049	7202	0.37	87
1971	18103	5339	660	5999	0.33	90
1972	15803	4218	871	5089	0.32	86
1973	19017	6430	1020	7450	0.39	81
1974	18946	4322	744	5066	0.27	90
1975	21678	5771	756	6527	0.30	85
1976	20964	5121	554	5675	0.27	91
1977	17209	4355	994	5349	0.31	84
1978	11084	2327	597	2924	0.26	88
1979	7751	2572	84	2656	0.34	97
1980	12316	4213	673	4886	0.40	79
1981	14311	4911	500	5411	0.38	89
1982	15417	5045	469	5514	0.36	91
1983	16480	3075	554	3629	0.22	90
1984	14783	4847	262	5109	0.35	92
1985	12779	2871	(246)	3117	0.24	95
1986	16588	3819	(430)	4249	0.26	87
1987	12346	2807	(216)	3023	0.24	95
1988	14393	3834	(230)	4064	0.28	92
MEANS, 95% CONFIDENCE LIMITS, N'S PRECEDING 1988:						
PREV 5	14595.2	3483.8	341.6	3825.4	0.26	92.0
CL=+/-	1994.8	1070.2	180.1	1077.3	0.04	3.6
N	5	5	5	5	5	5
PREV 10	13385.5	3648.7	403.1	4051.8	0.30	90.4
CL=+/-	2716.3	749.3	136.8	796.9	0.04	2.7
N	10	10	10	10	10	10

Numbers in parentheses refer to hooked and released fish.
Percent 1SW is calculated by year of smolt migration.

Table 25. Recreational catch of Atlantic Salmon in Statistical Area L, Gulf Region, Newfoundland and Labrador, 1953-1988.

YEAR	EFFORT ROD-DAYS	1SW <63CM	MSW >63CM	TOTAL CATCH	CPUE	PERCENT 1SW
1953	4075	1389	230	1619	0.40	.
1954	4595	994	196	1190	0.26	88
1955	2557	1534	193	1727	0.68	84
1956	7917	1419	283	1702	0.21	84
1957	3524	2201	293	2494	0.71	83
1958	4066	1919	410	2329	0.57	84
1959	4481	2207	379	2586	0.58	84
1960	4385	2159	324	2483	0.57	87
1961	4541	2047	260	2307	0.51	89
1962	5393	2939	336	3275	0.61	86
1963	6518	4240	299	4539	0.70	91
1964	9798	5390	650	6040	0.62	87
1965	8193	4388	385	4773	0.58	93
1966	9992	4428	433	4861	0.49	91
1967	6685	2501	267	2768	0.41	94
1968	7207	2750	162	2912	0.40	94
1969	12805	5160	542	5702	0.45	84
1970	14848	3586	594	4180	0.28	90
1971	10925	4183	385	4568	0.42	90
1972	11811	4183	232	4415	0.37	95
1973	11938	3838	372	4210	0.35	92
1974	10367	2867	172	3039	0.29	96
1975	10575	6232	130	6362	0.60	96
1976	11958	5262	72	5334	0.45	99
1977	7265	2357	55	2412	0.33	99
1978	8602	2962	258	3220	0.37	90
1979	8632	3437	29	3466	0.40	99
1980	8997	3700	320	4020	0.45	91
1981	9528	4389	163	4552	0.48	96
1982	9829	4521	126	4647	0.47	97
1983	8993	3262	56	3318	0.37	99
1984	7369	2924	47	2971	0.40	99
1985	7358	2431	(11)	2442	0.33	100
1986	9119	3527	(261)	3788	0.42	90
1987	8541	3211	(126)	3337	0.39	97
1988	9963	4383	(176)	4559	0.46	95
MEANS, 95% CONFIDENCE LIMITS, N'S PRECEDING 1988:						
PREV 5	8276.0	3071.0	100.2	3171.2	0.38	97.1
CL=+/-	860.3	517.6	123.0	621.2	0.03	2.4
N	5	5	5	5	5	5
PREV 10	8696.8	3436.4	139.7	3576.1	0.41	96.0
CL=+/-	811.2	461.2	77.8	491.9	0.03	1.7
N	10	10	10	10	10	10

Numbers in parentheses refer to hooked and released fish.
Percent 1SW is calculated by year of smolt migration.

Table 26. Recreational catch of Atlantic salmon in Salmon Fishing Area 14, Gulf Region, Newfoundland and Labrador 1953-1988

YEAR	EFFORT ROD-DAYS	1SW <63CM	MSW >63CM	TOTAL CATCH	CPUE	PERCENT 1SW
1953	2480	1300	390	1690	0.68	.
1954	2629	1254	439	1693	0.64	75
1955	2850	1313	495	1808	0.63	72
1956	3036	1862	486	2348	0.77	73
1957	2974	2463	635	3098	1.04	75
1958	4725	3254	641	3895	0.82	79
1959	4764	2913	669	3582	0.75	83
1960	4499	2253	454	2707	0.60	87
1961	6708	2812	804	3616	0.54	74
1962	8054	3211	375	3586	0.45	88
1963	10102	4075	816	4891	0.48	80
1964	9479	5251	1042	6293	0.66	80
1965	9071	6074	983	7057	0.78	84
1966	11222	6803	864	7667	0.68	88
1967	12271	5581	875	6456	0.53	89
1968	13209	5706	644	6350	0.48	90
1969	12917	6974	581	7555	0.58	91
1970	12801	6052	552	6604	0.52	93
1971	9196	4707	570	5277	0.57	91
1972	8993	2862	195	3057	0.34	96
1973	12780	6743	774	7517	0.59	79
1974	12282	3860	404	4264	0.35	94
1975	11439	5887	244	6131	0.54	94
1976	21042	9879	410	10289	0.49	93
1977	20985	7369	1065	8434	0.40	90
1978	14482	3814	255	4069	0.28	97
1979	16434	7479	178	7657	0.47	96
1980	16695	4681	517	5198	0.31	94
1981	22071	7580	357	7937	0.36	93
1982	19392	6034	187	6221	0.32	98
1983	19549	5800	199	5999	0.31	97
1984	20494	5794	272	6066	0.30	96
1985	17071	(52)4770	(29)129	4899	0.29	98
1986	20108	(17)6118	(102)286	6404	0.32	94
1987	20054	6507	(41)256	6763	0.34	96
1988	24675	7843	(171)422	8265	0.33	94
MEANS, 95% CONFIDENCE LIMITS, N'S PRECEDING 1988:						
PREV 5	19455.2	5797.8	228.4	6026.2	0.31	96.1
CL=+/-	1374.5	644.6	80.3	699.7	0.02	0.6
N	5	5	5	5	5	5
PREV 10	18635.0	5857.7	263.6	6121.3	0.33	95.8
CL=+/-	2337.0	1195.7	78.8	1189.5	0.03	1.2
N	10	10	10	10	10	10

Numbers in parentheses refer to hooked and released fish.
Percent 1SW is calculated by year of smolt migration.

Table 27. Recreational catch of Atlantic Salmon in Statistical Area M, Gulf Region, Newfoundland and Labrador, 1953-1988.

YEAR	EFFORT ROD-DAYS	1SW <63CM	MSW >63CM	TOTAL CATCH	CPUE	PERCENT 1SW
1953	2348	1199	386	1585	0.68	.
1954	2409	1079	310	1389	0.58	79
1955	2224	1073	236	1309	0.59	82
1956	2569	1616	269	1885	0.73	80
1957	2438	2041	319	2360	0.97	84
1958	4074	2517	573	3090	0.76	78
1959	4115	2226	560	2786	0.68	82
1960	3810	1676	397	2073	0.54	85
1961	5936	2142	681	2823	0.48	71
1962	6946	2119	298	2417	0.35	88
1963	7139	2720	594	3314	0.46	78
1964	5726	2896	570	3466	0.61	83
1965	4897	3444	532	3976	0.81	84
1966	6122	3395	441	3836	0.63	89
1967	6558	2411	342	2753	0.42	91
1968	6784	1781	178	1959	0.29	93
1969	6741	2940	226	3166	0.47	89
1970	6044	1532	126	1658	0.27	96
1971	4818	1739	200	1939	0.40	88
1972	4969	1085	81	1166	0.23	96
1973	6122	2634	194	2828	0.46	85
1974	5672	1300	98	1398	0.25	96
1975	5458	2056	74	2130	0.39	95
1976	12781	4275	66	4341	0.34	97
1977	12350	3151	454	3605	0.29	90
1978	8718	1800	59	1859	0.21	98
1979	9805	3171	46	3217	0.33	98
1980	10202	2016	148	2164	0.21	96
1981	13767	3224	98	3322	0.24	95
1982	11267	2554	53	2607	0.23	98
1983	10832	1721	51	1772	0.16	98
1984	11483	2996	84	3080	0.27	95
1985	9423	2213	(26)	2239	0.24	99
1986	11022	3263	(98)	3361	0.30	96
1987	10571	2887	(35)	2922	0.28	99
1988	12811	3945	(168)	4113	0.32	95
MEANS, 95% CONFIDENCE LIMITS, N'S PRECEDING 1988:						
PREV 5	10666.2	2616.0	58.8	2674.8	0.25	97.7
CL=+/-	770.7	682.4	38.6	652.1	0.05	0.8
N	5	5	5	5	5	5
PREV 10	10709.0	2584.5	69.8	2654.3	0.25	97.4
CL=+/-	1377.8	605.3	26.5	609.3	0.05	0.9
N	10	10	10	10	10	10

Numbers in parentheses refer to hooked and released fish.
Percent 1SW is calculated by year of smolt migration.

Table 28. Recreational catch of Atlantic Salmon in Statistical Area N, Gulf Region, Newfoundland and Labrador, 1953-1988.

YEAR	EFFORT ROD-DAYS	1SW <63CM	MSW >63CM	TOTAL CATCH	CPUE	PERCENT 1SW
1953	132	101	4	105	0.80	.
1954	153	49	1	50	0.33	99
1955	170	85	15	100	0.59	77
1956	161	89	20	109	0.68	81
1957	192	194	28	222	1.16	76
1958	189	199	18	217	1.15	92
1959	255	159	14	173	0.68	93
1960	307	167	4	171	0.56	98
1961	282	199	9	208	0.74	95
1962	590	603	12	615	1.04	94
1963	1375	908	83	991	0.72	88
1964	1794	1449	137	1586	0.88	87
1965	1757	1771	60	1831	1.04	96
1966	1985	1977	72	2049	1.03	96
1967	2125	2011	139	2150	1.01	93
1968	2215	2223	110	2333	1.05	95
1969	1957	2748	82	2830	1.45	96
1970	3094	2913	105	3018	0.98	96
1971	1549	2018	123	2141	1.38	96
1972	1502	1332	34	1366	0.91	98
1973	2903	2648	148	2796	0.96	90
1974	3210	1789	15	1804	0.56	99
1975	3344	2716	16	2732	0.82	99
1976	3533	3014	34	3048	0.86	99
1977	3376	2413	18	2431	0.72	99
1978	2687	1350	13	1363	0.51	99
1979	3818	3281	13	3294	0.86	99
1980	3380	1651	32	1683	0.50	99
1981	4324	2511	31	2542	0.59	98
1982	4324	2156	54	2210	0.51	98
1983	4320	1947	16	1963	0.45	99
1984	4633	1753	3	1756	0.38	100
1985	3463	(52)1377	(3)	1380	0.40	100
1986	3938	(17)1648	(4)	1652	0.42	100
1987	3839	1656	(6)	1662	0.43	100
1988	5214	2148	(3)	2151	0.41	100
MEANS, 95% CONFIDENCE LIMITS, N'S PRECEDING 1988:						
PREV 5	4038.6	1676.2	6.4	1682.6	0.42	99.6
CL=+/-	451.0	255.9	6.8	261.1	0.03	0.3
N	5	5	5	5	5	5
PREV 10	3872.6	1933.0	17.5	1950.5	0.50	99.1
CL=+/-	578.3	421.2	11.9	424.9	0.09	0.5
N	10	10	10	10	10	10

Numbers in parentheses refer to hooked and released fish.
Percent 1SW is calculated by year of smolt migration.

Table 29. Recreational catch of Atlantic Salmon in Statistical Area A(01), Gulf Region, Newfoundland and Labrador, 1953-1988.

YEAR	EFFORT ROD-DAYS	1SW <63CM	MSW >63CM	TOTAL CATCH	CPUE	PERCENT 1SW
1953	.	.	.	.	.	.
1954	.	.	.	.	.	.
1955	.	.	.	.	.	.
1956	.	.	.	.	.	.
1957	.	.	.	.	.	.
1958	187	12	0	12	0.06	.
1959	133	31	0	31	0.23	100
1960	138	25	1	26	0.19	97
1961	19	4	2	6	0.32	93
1962	182	3	0	3	0.02	100
1963	979	26	0	26	0.03	100
1964	753	72	0	72	0.10	100
1965	821	58	0	58	0.07	100
1966	776	94	7	101	0.13	89
1967	1687	38	0	38	0.02	100
1968	1977	57	0	57	0.03	100
1969	2192	21	0	21	0.01	100
1970	1105	41	0	41	0.04	100
1971	570	23	0	23	0.04	100
1972	165	22	0	22	0.13	100
1973	712	30	0	30	0.04	100
1974	687	31	0	31	0.05	100
1975	457	46	0	46	0.10	100
1976	832	92	0	92	0.11	100
1977	1341	143	0	143	0.11	100
1978	664	91	0	91	0.14	100
1979	662	126	0	126	0.19	100
1980	637	76	0	76	0.12	100
1981	627	147	8	155	0.25	90
1982	522	53	0	53	0.10	100
1983	868	132	2	134	0.15	96
1984	381	58	0	58	0.15	100
1985	521	88	(0)	88	0.17	100
1986	505	136	(0)	136	0.27	100
1987	651	77	(0)	77	0.12	100
1988	943	158	(0)	158	0.17	100
MEANS, 95% CONFIDENCE LIMITS, N'S PRECEDING 1988:						
PREV 5	585.2	98.2	0.4	98.6	0.17	99.6
CL=+/-	184.8	42.7	1.1	43.4	0.05	0.7
N	5	5	5	5	5	5
PREV 10	603.8	98.4	1.0	99.4	0.16	99.1
CL=+/-	130.7	24.4	1.8	25.5	0.03	1.5
N	10	10	10	10	10	10

Numbers in parentheses refer to hooked and released fish.
Percent 1SW is calculated by year of smolt migration.

Table 30. Recreational catch of Atlantic Salmon in Statistical Area O(50), Gulf Region, Newfoundland and Labrador, 1953-1988.

YEAR	EFFORT ROD-DAYS	1SW <63CM	MSW >63CM	TOTAL CATCH	CPUE	PERCENT 1SW
1953	.	.	.	.	.	.
1954	67	126	128	254	3.79	.
1955	456	155	244	399	0.88	34
1956	306	157	197	354	1.16	44
1957	344	228	288	516	1.50	35
1958	275	526	50	576	2.09	82
1959	261	497	95	592	2.27	85
1960	244	385	52	437	1.79	91
1961	471	467	112	579	1.23	77
1962	336	486	65	551	1.64	88
1963	609	421	139	560	0.92	78
1964	1206	834	335	1169	0.97	56
1965	1596	801	391	1192	0.75	68
1966	2339	1337	344	1681	0.72	70
1967	1901	1121	394	1515	0.80	77
1968	2233	1645	356	2001	0.90	76
1969	2027	1265	273	1538	0.76	86
1970	2558	1566	321	1887	0.74	80
1971	2259	927	247	1174	0.52	86
1972	2357	423	80	503	0.21	92
1973	3043	1431	432	1863	0.61	49
1974	2713	740	291	1031	0.38	83
1975	2180	1069	154	1223	0.56	83
1976	3896	2498	310	2808	0.72	78
1977	3918	1662	593	2255	0.58	81
1978	2413	573	183	756	0.31	90
1979	2149	901	119	1020	0.47	83
1980	2476	938	337	1275	0.51	73
1981	3353	1698	220	1918	0.57	81
1982	3279	1271	80	1351	0.41	96
1983	3529	2000	130	2130	0.60	91
1984	3997	987	185	1172	0.29	92
1985	3664	1092	100	1192	0.33	91
1986	4643	1071	184	1255	0.27	86
1987	4993	1887	215	2102	0.42	83
1988	5707	1592	251	1843	0.32	88
MEANS, 95% CONFIDENCE LIMITS, N'S PRECEDING 1988:						
PREV 5	4165.2	1407.4	162.8	1570.2	0.38	88.7
CL=+/-	632.0	611.6	57.9	619.9	0.11	3.8
N	5	5	5	5	5	5
PREV 10	3449.6	1241.8	175.3	1417.1	0.41	87.4
CL=+/-	937.5	334.9	53.3	335.9	0.08	4.0
N	10	10	10	10	10	10

Percent 1SW is calculated by year of smolt migration.

Table 31. Counts of Atlantic salmon from downstream and upstream traps of counting fences (Western Arm Brook, 1971-88; Hughes Brook, 1984-88) and fishways (Torrent River, 1971-88; Lomond River, 1971-88), Gulf Region, Newfoundland and Labrador. Number in parentheses indicates returns before transfers to Torrent River and fence mortalities subtracted.

	Salmon Fishing Area 14										Salmon Fishing Area 13				
	Statistical Area N					Statistical Area M					Statistical Area L				
	Western Arm Brook fence					Torrent River fishway			Lomond River fishway			Hughes Brook fence			
	Downstream		Upstream								Downstream		Upstream		
Year	Smolts	Kelt	1SW	MSW	Total*	1SW	MSW	Total	1SW	MSW	Total	Smolts	Kelt	1SW	MSW	Total
1971	5,735	185	427	---	427	54	4	58	6	0	6	---	---	---	---	---
1972	11,905	211	205(309)	9	214	64	3	67	30	15	45	---	---	---	---	---
1973	8,484	95	351(555)	30	381	96	12	108	108	110	218	---	---	---	---	---
1974	11,854	302	299(399)	4	303	38	3	41	41	33	74	---	---	---	---	---
1975	9,600	203	393(631)	1	394	191	25	216	1	0	1	---	---	---	---	---
1976	6,232	201	420(520)	0	420	341	47	388	132	11	143	---	---	---	---	---
1977	9,899	327	341	3	344	789	33	822	192	11	203	---	---	---	---	---
1978	13,071	210	285	1	286	971	21	992	117	12	129	---	---	---	---	---
1979	8,349	1	1,578	0	1,578	1,984	39	2,023	195	1	196	---	---	---	---	---
1980	15,665	899	430	3	433	792	63	855	301	19	320	---	---	---	---	---
1981	13,981	168	447	1	448	2,101	97	2,198	110	50	160	---	---	---	---	---
1982	12,477	300	387	3	390	2,112	523	2,635	275	16	291	---	---	---	---	---
1983	10,552	207	1,141	4	1,145	2,007	442	2,449	220	7	227	---	---	---	---	---
1984	20,653	719	117	0	117	1,805	288	2,093	440	47	487	253	0	90	3	93
1985	13,417	111	162	1	163	1,553	30	1,583	190	14	204	60	0	13	0	13
1986	17,719	168	252	0	252	2,815	90	2,906	354	32	386	601	0	63**	2	65
1987	17,029	73	378	1	379	2,505	68	2,573	355	11	366	639	0	37	6	43***
1988	15,309	353	102	1	103	2,065	41	2,106	437	21	458	1,205	0	63	0	63****
1983-87																
Mean	15,874.00	255.60	410.00	1.20	411.20	2,137.00	183.60	2,320.80	311.80	22.20	334.00	388.25	0	50.75	2.75	53.50
S.D.	3,935.02	264.12	420.63	1.64	422.20	515.58	175.63	504.66	104.10	16.84	117.78	279.39	0	33.19	2.50	33.88
n	5	5	5	5	5	5	5	5	5	5	5	4	4	4	4	4
1978-87																
Mean	14,291.30	285.60	517.70	1.40	519.10	1,864.50	166.10	2,030.70	255.70	20.90	276.60					
S.D.	3,598.41	290.70	468.31	1.43	468.56	624.91	184.06	690.73	108.35	16.64	113.49					
n	10	10	10	10	10	10	10	10	10	10	10					

* Adult transfers to Torrent River, 1972-76; 56, 203, 83, 223 and 100 fish, respectively.

** 10 fish used for enhancement (eggs to incubation box).

*** 16 1SW and 6 MSW below fence when removed, plus 21 1SW removed from below fence for broodstock.

**** 33 1SW through fence, plus 30 1SW removed when fence relocated downstream.

Table 32. Timing of angling catches and returns to fence at Fischell's Brook in 1988. C, count; %c, cumulative percent of counts for season.

Date Week	MSW				1SW									
							Angling							
	Fence counts		Angling below fence		Fence counts		Below fence		Above fence		Total Angling		Total Fence counts	
	c	%c	c	%c	c	%c	c	%c	c	%c	c	%c	c	%c
604 - 610	0	0	0	0	0	0	20	8	0	0	20	8	0	0
611 - 617	3	33	3	43	7	1	13	13	0	0	16	14	10	2
618 - 624	0	33	2	71	39	8	17	20	0	0	19	21	39	8
625 - 701	0	33	0	71	39	14	49	39	3	2	49	40	39	15
702 - 708	2	56	1	86	104	32	59	63	14	14	60	64	106	32
709 - 715	2	78	1	100	87	47	32	76	26	35	33	76	89	47
716 - 722	0	78	0	100	62	57	17	82	28	58	17	83	62	57
723 - 724	0	78	0	100	81	71	29	94	25	78	29	94	81	71
730 - 805	0	78	0	100	68	82	7	97	1	79	7	97	68	82
806 - 812	0	78	0	100	60	92	0	97	1	80	0	97	60	92
813 - 819	0	78	0	100	19	95	3	98	5	84	3	98	19	95
820 - 826	2	100	0	100	27	100	5	100	17	98	5	100	29	100
827 - 902	.	100	0	100	.	100	0	100	2	99	0	100	.	100
903 - 905	.	100	0	100	.	100	0	100	1	100	0	100	.	100
TOTAL	9		7		593		251		123		374		602	

Table 33. Historical salmon angling catches prior to installation and after removal dates for Fischells Brook counting fence in 1988.

	1SW				MSW			
Year	Before June 10	After Aug. 21	Total	Percent during fence	Before June 10	After Aug. 21	Total	Percent during fence
1975	38	0	184	79.3	20	0	21	4.8
1976	27	0	185	85.4	6	0	16	62.5
1977	1	4	245	98.0	22	0	66	66.7
MEAN				86.6				44.7

Table 34. Juvenile Atlantic salmon densities per 100 m^2 found at electrofishing sites on Harrys River, Newfoundland, 1987-1988. N/F indicates years site was not fished. Age classes determined from aging in 1987 and length classes 1988. Blank indicates zero fish.

Site	1987					1988				
	0+	1+	2+	3+	Total Parr	0+	1+	2+	3+	Total Parr
Main River 1			1.0		1.0	2.4				
Main River 6	12.9	6.3	4.9	2.4	13.6	2.1	9.0	1.5	1.0	11.5
Black Duck 2	13.2	5.3	5.3	1.1	11.7	N/F				
Black Duck 3	4.0	2.6	0.4	0.4	3.4	33.0	5.5	2.9	0.3	8.7
Trout Brook 5	0.5	2.5	1.5	0.5	4.5	2.2	2.7		0.5	3.2
Stag Lake 9	10.4	1.8			1.8	26.8	7.5	0.9		8.4
Pinchgut 7	19.0	9.4	0.7	0.2	10.3	9.7	8.6	2.3	0.6	11.5
Pinchgut 8	34.6	6.2	1.6	1.5	9.3	21.5	13.7	3.4	0.5	17.6
Pinchgut 10	55.6	4.5	1.4	1.1	7.0	58.5	10.8	0.5	0.2	11.5
Gull Pono 11	N/F					4.6	5.9	4.3	8.7	18.9
Pinchgut 12	N/F					3.7	38.1	13.4	12.8	64.3

Table 35. Historical angling catches for Fischells Brook.

RIVER 4000960 FISCHELLS BROOK

Year	Effort Rod Days	1SW <63CM	MSW >63CM	Total Catch	CPUE	Percent 1SW
1953	211	97	38	135	0.64	.
1954	172	34	43	77	0.45	69
1955	215	32	45	77	0.36	43
1956	259	147	69	216	0.83	32
1957	441	182	78	260	0.59	65
1958	459	156	99	255	0.56	65
1959	407	144	31	175	0.43	83
1960	366	95	38	133	0.36	79
1961	582	193	72	265	0.46	57
1962	674	282	57	339	0.50	77
1963	943	425	120	545	0.58	70
1964	874	305	136	441	0.50	76
1965	624	202	84	286	0.46	78
1966	442	52	55	107	0.24	79
1967	612	355	40	395	0.65	57
1968	642	277	44	321	0.50	89
1969	718	416	77	493	0.69	78
1970	766	302	135	437	0.57	75
1971	582	239	27	266	0.46	92
1972	417	133	63	196	0.47	79
1973	952	401	81	482	0.51	62
1974	753	220	27	247	0.33	94
1975	522	184	21	205	0.39	91
1976	418	185	16	201	0.48	92
1977	468	245	66	311	0.66	74
1978	292	154	31	185	0.63	89
1979	168	67	0	67	0.40	100
1980	386	227	40	267	0.69	.63
1981	463	272	11	283	0.61	95
1982	651	357	7	364	0.56	97
1983	377	128	7	135	0.36	98
1984	411	214	8	222	0.54	94
1985	373	145	(3)	145	0.40	99
1986	427	184	(4)	184	0.44	97
1987	266	59	(2)	59	0.23	99
1988	840	374	(7)	374	0.45	89
MEANS, 95% CONFIDENCE LIMITS, N'S PRECEDING 1986:						
PREV 5	370.8	146.0	4.8	150.8	0.39	97
CL=+/-	62.9	59.1	2.6	60.8	0.11	2
N	5	5	5	5	5	5
PREV 10	381.4	180.7	11.3	192.0	0.49	93
CL=+/-	128.8	91.4	13.3	95.7	0.14	11
N	10	10	10	10	10	10
PREV 15	461.8	202.8	21.6	224.4	0.48	90
CL=+/-	197.2	93.4	24.2	109.6	0.13	13
N	15	15	15	15	15	15

Numbers in parentheses refer to hooked and released fish.

Table 36. Historical angling catches for Harrys River.

RIVER 4101200 HARRYS RIVER

Year	Effort Rod Days	1SW <63CM	MSW >63CM	Total Catch	CPUE	Percent 1SW
1953	3458	935	146	1081	0.31	.
1954	800	244	18	262	0.33	98
1955	1464	499	61	560	0.38	80
1956	2211	668	206	874	0.40	71
1957	1689	1418	493	1911	1.13	58
1958	537	984	218	1202	2.24	87
1959	1466	604	95	699	0.48	91
1960	302	603	91	694	2.30	87
1961	1676	734	119	853	0.51	84
1962	3316	1488	226	1714	0.52	76
1963	4354	2467	457	2924	0.67	77
1964	3933	2673	373	3046	0.77	87
1965	3338	1175	262	1437	0.43	91
1966	2113	620	316	936	0.44	79
1967	2630	706	248	954	0.36	71
1968	2640	863	85	948	0.36	89
1969	3360	1491	181	1672	0.50	83
1970	5288	1662	207	1869	0.35	88
1971	5146	1435	47	1482	0.29	97
1972	3632	782	32	814	0.22	98
1973	4748	1583	196	1779	0.37	80
1974	4218	941	34	975	0.23	98
1975	2180	704	16	720	0.33	98
1976	2893	902	40	942	0.33	95
1977	3853	1008	68	1076	0.28	93
1978	3142	713	65	778	0.25	94
1979	755	148	1	149	0.20	100
1980	1602	518	65	583	0.36	69
1981	2082	659	18	677	0.33	97
1982	2141	570	31	601	0.28	96
1983	2439	533	30	563	0.23	95
1984	2543	720	11	731	0.29	98
1985	1686	173	0	173	0.10	100
1986	2628	382	(8)	390	0.15	96
1987	1643	378	(8)	386	0.23	98
1988	2077	434	(11)	4445	0.21	97
MEANS, 95% CONFIDENCE LIMITS, N'S PRECEDING 1986:						
PREV 5	2187.8	437.2	11.4	448.6	0.20	97
CL=+/-	482.6	203.4	11.2	209.8	0.07	2
N	5	5	5	5	5	5
PREV 10	2066.1	479.4	23.7	503.1	0.24	94
CL=+/-	675.2	205.7	24.2	220.6	0.08	9
N	10	10	10	10	10	10
PREV 15	2570.2	662.1	39.4	701.5	0.26	94
CL=+/-	1069.2	360.5	49.0	402.3	0.08	8
N	15	15	15	15	15	15

Numbers in parentheses refer to hooked and released fish.

Table 37. Regression statistics for Fishchells Brook, Harrys River, and Area K angling catches.

	R2	P	Slope	Intercept	Percentage Drainage Area
Fischells Brook					
1SW	55.8	0.0001	11.10	1975.52	4.8
MSW	55.9	0.0001	8.72	441.27	5.7
TOTAL	64.8	0.0001	12.39	1918.31	5.0 (6.4)
Harrys River					
1SW	45.1	0.0001	1.50	2232.12	25.6
MSW	69.2	0.0001	2.05	524.87	15.2
TOTAL	52.7	0.0001	1.63	2656.11	24.9 (14.6)

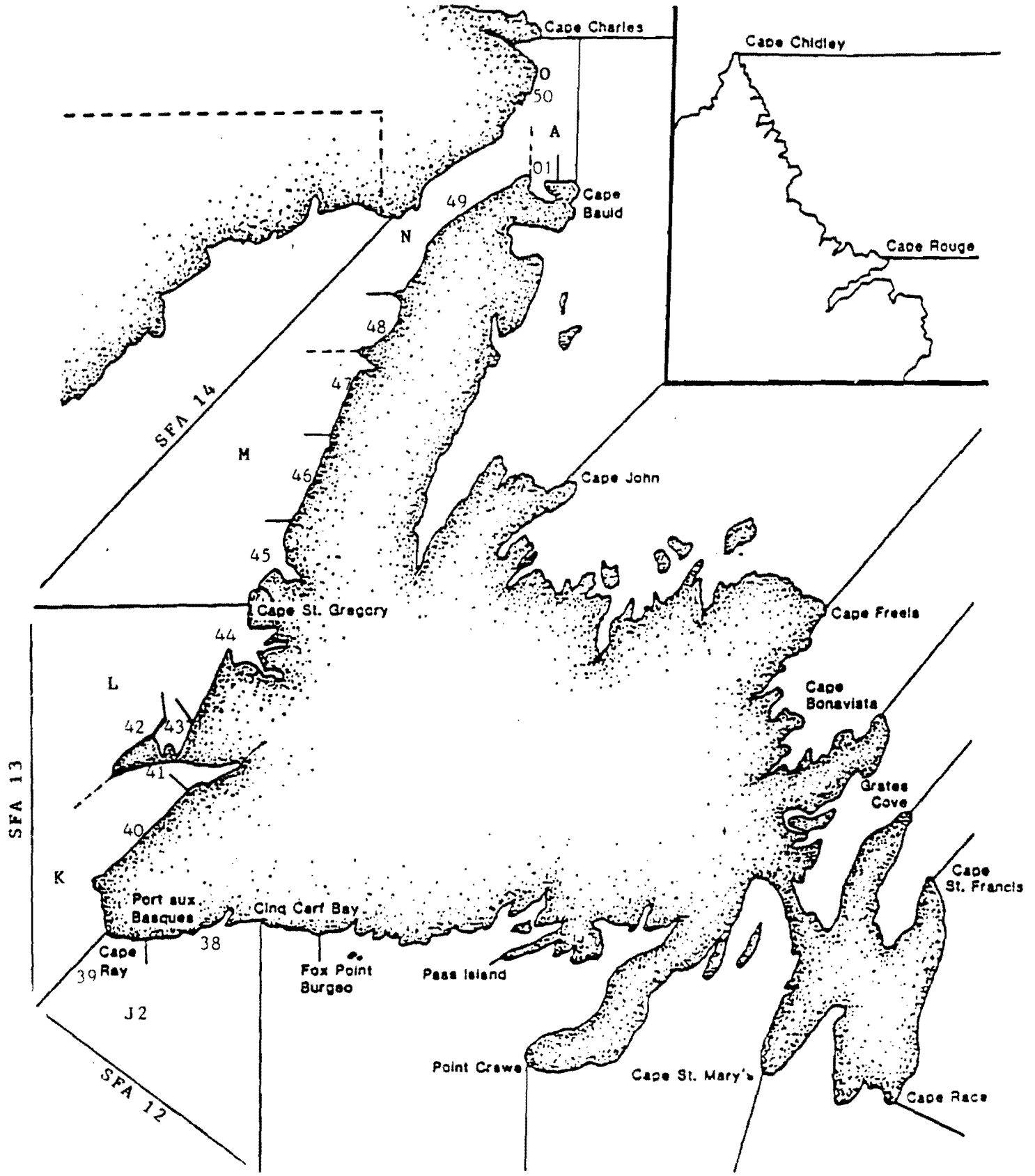

Fig. 1. Boundaries of Salmon Fishing Areas 12, 13, and 14, Statistical Areas, and Statistical Sections, Gulf Region, Newfoundland and Labrador.

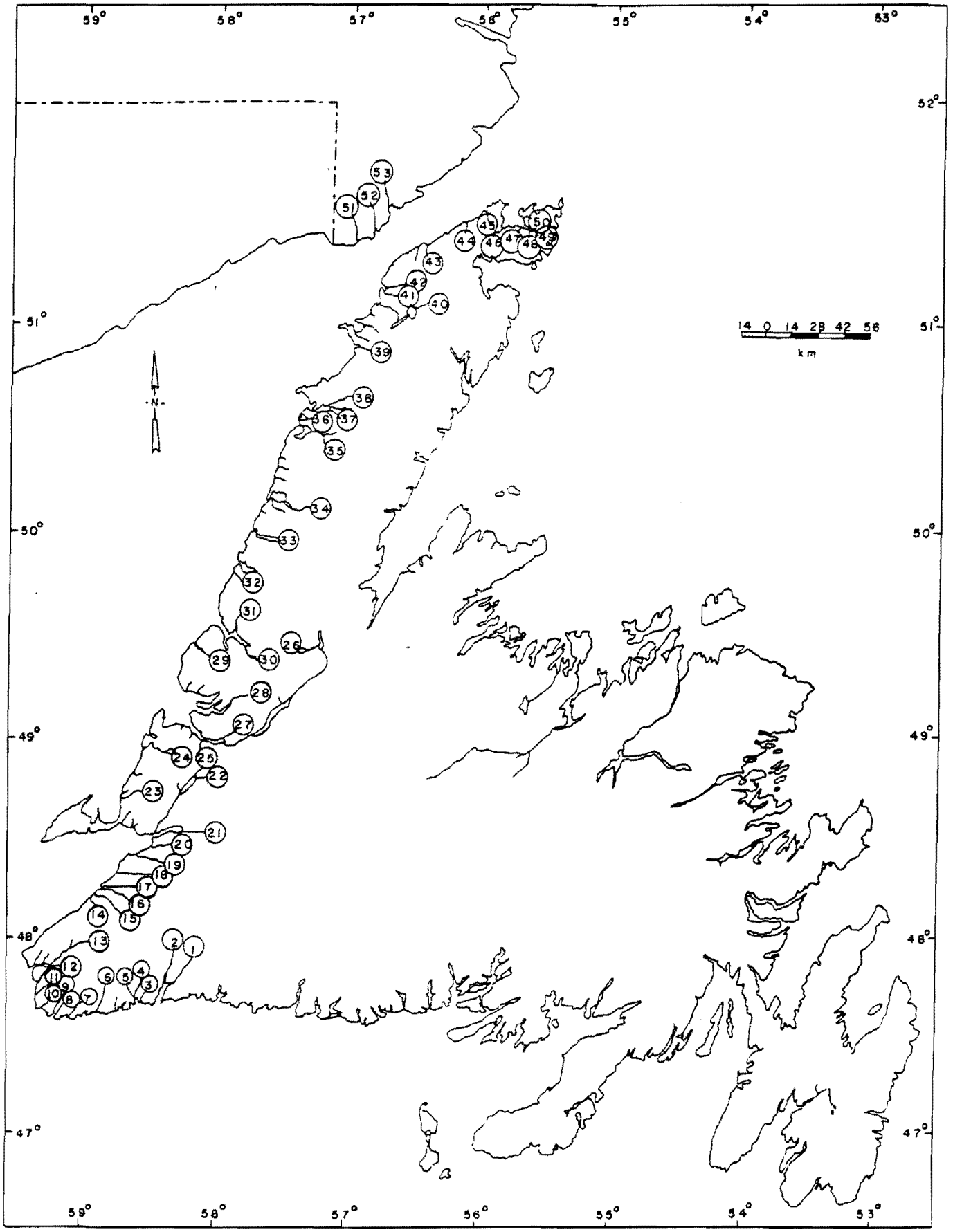

Fig. 2. Location of salmon rivers in Western Newfoundland and Labrador. Refer to Table 2 for map index.

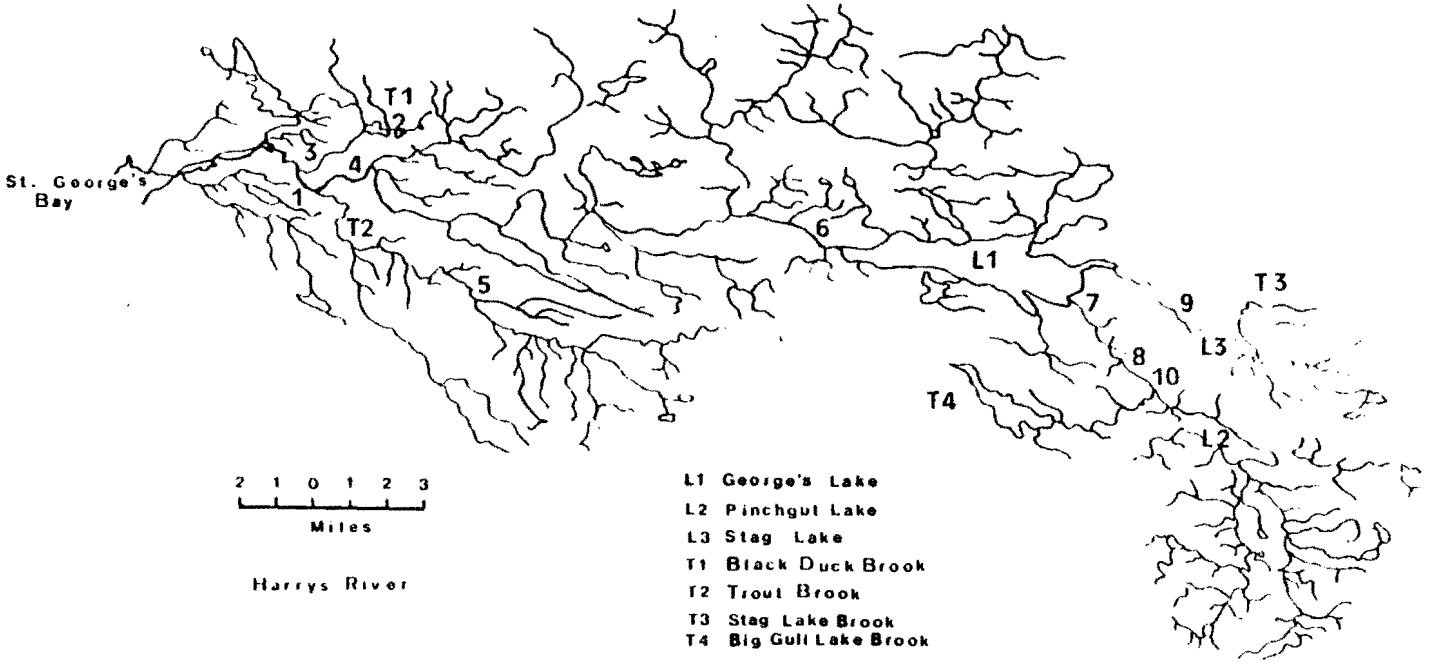

Fig. 3. Location of electrofishing sites, Harrys River.

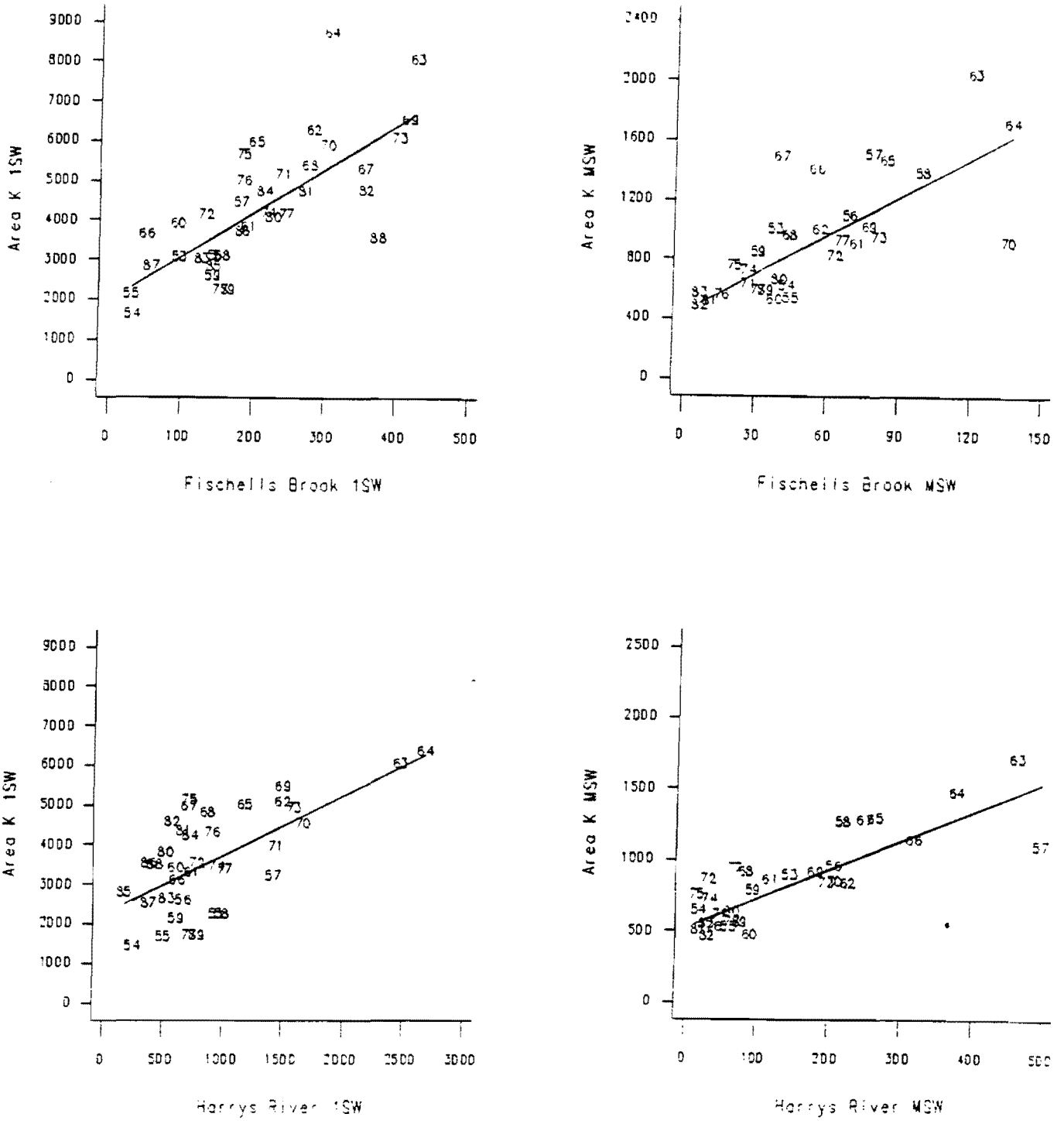

Fig. 4. Relationship between angling catch at Harrys River and Fischells Brook and Area K angling catch.

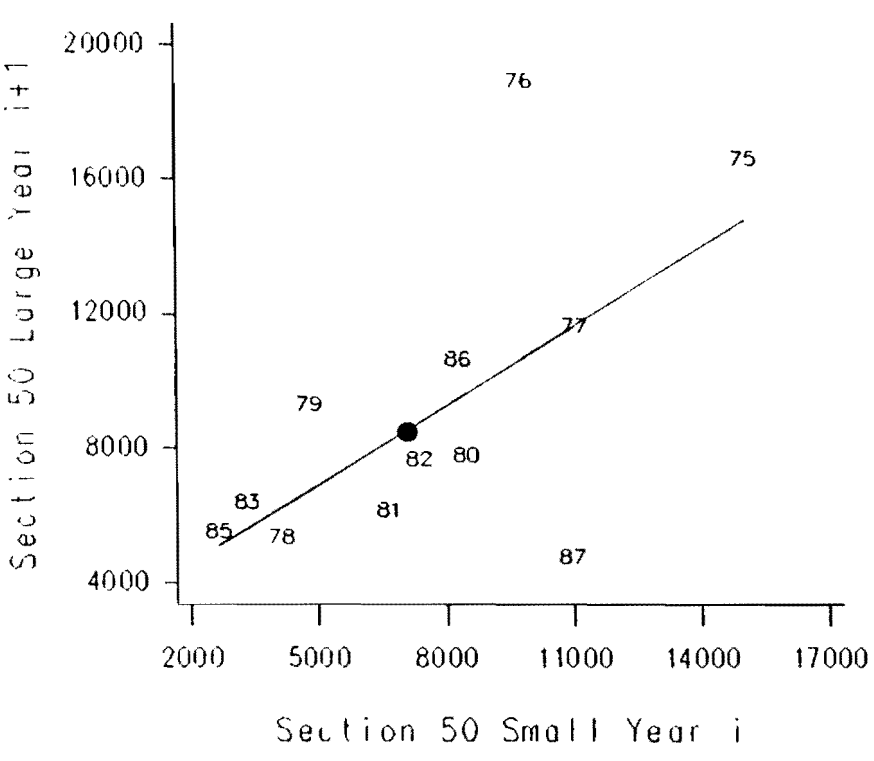

Fig. 5. Forecast of 1989 large salmon commercial catch (year i+1) in Area 0(50) using small catch (year i). Large salmon (year i+1)= 1SW (year i) X 0.78 + 3030. R^2=0.40, p=0.03. Year of small catch shown; 1989 forecast.

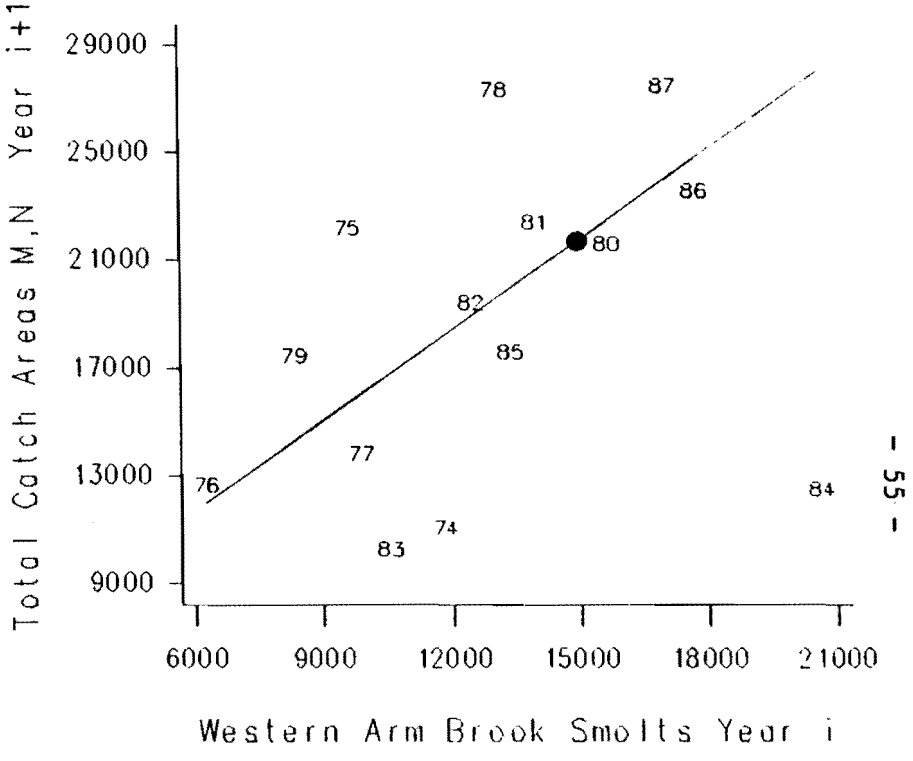

Fig. 6. Forecast of 1989 small commercial and 1SW sport catch Areas M+N. Catch (year i+1) = 1.1 X WAB SMOLTS (year i) + 5083. R^2=0.42, p=0.02. Year of smolt migration shown; 1989 forecast.