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Canadian Atlantic Fisheries  
Scientific Advisory Committee

Comité scientifique consultatif des  
pêches canadiennes dans l'Atlantique

CAFSAC Research Document 88/1

CSCPCA Document de recherche 88/1

**Status of Atlantic salmon stocks, Gulf Region,  
Newfoundland and Labrador, 1987**

by

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### ABSTRACT

Commercial landings of all salmon by number were slightly (12%) above 1986 but exceeded mean catch since 1984 by 75% and were the highest since 1981. Landings of small salmon were the greatest since 1976 and of large salmon the greatest since 1983. The largest commercial catch of small and large salmon was in Area K for insular Newfoundland. However, the large salmon catch in Southern Labrador was three times Area K. Recreational catches of all salmon were slightly below but within 10% of 1986, five, and ten year means. The largest recreational catch of 1SW salmon was in Area L, while Areas K and O(50) had the highest MSW salmon catches (including hook and release). Large salmon commercial catch in Area O(50), and total returns to Area N and Area M are forecast to be similar in 1988 to 1987.

### RESUME

Les débarquements numériques commerciaux de saumons de toutes catégories, les plus élevés depuis 1981, ont été légèrement supérieurs (12%) à ceux de 1986 et ont très largement excédé (75%) les prises moyennes depuis 1981. Les débarquements de petits saumons et ceux de gros saumons ont été les plus importants depuis 1976 et 1983 respectivement. C'est dans la zone K de la partie insulaire de la région de Terre-Neuve que l'on a obtenu les prises commerciales de petits et gros saumons les plus élevées. Toutefois, les prises de gros saumons provenant du Sud du Labrador ont été trois fois supérieures à celles de la zone K. Les prises sportives de saumons toutes catégories ont été quelque peu inférieures aux moyennes de 1986, ainsi que des cinq et dix ans, l'écart ne dépassant pas cependant les 10 %. Les plus grosses prises sportives d'unibermarins provenaient de la zone L, tandis que les plus grosses prises de redibermarins (y compris les saumons capturés et libérés) ont eu lieu dans les zones K et O(5). Pour 1988, on s'attend à ce que les prises commerciales de gros saumons de la zone O(50) et les retours totaux dans les zones N et M soient comparables à ceux de 1987.

## INTRODUCTION

This paper presents the status of Atlantic salmon stocks in Gulf Region portions of Newfoundland and Labrador for 1987. The Gulf Region consists of three Salmon Fishing Areas (12, 13, 14) which are comprised of seven Statistical Areas (J<sub>2</sub>, K, L, M, N, O(50), A(01) (Figs. 1, 2; Table 1). There are 51 scheduled salmon rivers in the Gulf Region (Table 2) and river escapements are counted on four, by fishways on Torrent and Lomond Rivers and counting fences on Western Arm and Hughes Brooks (Fig. 3).

Commercial and recreational harvest statistics, fishway, and fence counts are compared to historical data with consideration for the 1987 management plan to assess the status of West Newfoundland and Southern Labrador salmon stocks.

Commercial regulations in 1987 were similar to those in effect for 1986. Area 12 remained closed, Area 13 was open from June 5-July 10 as from 1984-1986 (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 1987. In 1986, 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 Anguille-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 1986. Subject to closures as a result of low water levels (Table 25) and local variation orders the following seasons applied to this fishery:

<u>Area</u>	<u>Season</u>
Fox Point to Cape Ray	June 13 - Sept. 7
Cape Ray to Salmon Point (Bonne Bay)	June 6 - Aug. 30
Salmon Point to Cape Bauld	June 20 - Aug. 30
Southern Labrador	June 6 - Sept. 13

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 1987.

## METHODS

The 1987 catch and effort statistics for recreational fisheries were compiled from weekly angling reports submitted by field personnel of Protection and Regulations Branch as described by Peppar (1984) and Peppar and Mullins (1985). These data were added to historical catch statistics presented by Peppar and Mullins (1987).

Salmon Fishing Area 12 recreational catch statistics had previously included Cinq Cerf Brook. Because this river lies within Newfoundland Region its catch has been removed from SFA 12 and Gulf Region recreational landings. As a result landings will differ from previous Newfoundland - Labrador Gulf Region assessments (Peppar and Mullins 1987).

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. Numbers of fish in a gutted head-on condition were estimated using a mean weight conversion factor of 1.36 kg (3 lbs) for small and 3.64 kg (8 lbs) for large salmon.

Unsize 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. A total (preliminary) of 6,356 kg were reported as unsize. Only 658 kg were from licensed fish buyer sales, the other 5,698 kg were reported on supplementary "B" slips as local sales on a monthly basis. Numbers were calculated using the mean weight of small and large salmon by section.

In 1987, all sales of salmon to licensed buyers were in the gutted head-on condition. A conversion factor of 1.2 was used to convert to round weight (Reddin and Short 1981). In 1986, all fish were also sold in a gutted head-on condition and were converted to round weight using 1.2. These fish had been converted using the 1.1 factor provided by Economic Services in 1986. As a result, these figures will differ from previous Newfoundland - Labrador Gulf Region assessments (Peppar and Mullins 1987). The 1984 and 1985 sales had also been converted using 1.1. However, sales in these years were as gutted head-on, gutted head-off, pickled and smoked. Each of these requires a different conversion factor. Application of these factors must wait for re-analysis of 1984-1985 data sets which have recently been transferred to Science Branch from Economic Services. Once these conversions have been achieved, landings by weight for Newfoundland-Labrador will be consistent between Gulf and Newfoundland Regions.

The historical commercial landings are added to those previously compiled by Peppar and Mullins (1987).

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

June to October mean monthly discharges for Ste. Genevieve River and Upper Humber River for 1980-1986 were obtained from Anon (1985, 1986, 1987). Preliminary 1987 June to October mean monthly discharges for Upper Humber River were obtained from Environment Canada monthly summaries of Surface Water Conditions provided by R.D. McBride (Water Resources Branch, Inland Waters and Lands, Conservation and Protection, 4<sup>th</sup> Floor, Queen Square, 45 Alderney Drive, Dartmouth, Nova Scotia B2Y 2N6). Ste. Genevieve River was chosen because it is the nearest river to Western Arm Brook with a streamflow gauging station. Data from the Upper Humber River are presented because it is the major angling river and is one of two rivers in West Newfoundland for which streamflow data in 1987 is available.

#### ADJUSTMENT TO WESTERN ARM BROOK RETURNS IN 1985, 1986

In 1985 and 1986 below normal flows from August to October (Table 3a) inhibited fish from moving through the fence at Western Arm Brook. Flow rates were determined on Ste. Genevieve River, where the nearest water discharge station (within 5 km) to Western Arm Brook is located (Table 3a). Large numbers were seen below the fence when it was removed at the end of October in both years and a method was developed to estimate these fish so that total returns could be calculated. It was assumed that none of these fish below the fence would spawn.

As part of an experiment on hook and release mortality fish were marked in the summer recreational fishery. Fish were marked according to whether they were considered a "good release", played for a short time by the angler and demonstrating a healthy activity upon release, or a "poor release" which had been played for a relatively longer time and exhibited unhealthy behaviour upon release. Returns to the river after marking began were estimated by the adjusted Petersen method (Ricker 1975),

$$N = \frac{(M + 1)(C + 1)}{R + 1}$$

where M = number marked  
C = catch at fence  
R = recaptures  
N = population estimate

The assumptions required for application of this formula are:

1. Marked and unmarked fish have the same mortality.

2. Marks are not lost.
3. Marked and unmarked fish are equally vulnerable to recapture method.
4. Random mixing of marked with unmarked fish.
5. All marks are recognized and reported.
6. Negligible immigration and emigration within the population.

Only "good releases" were recaptured at the fence. Hence, only "good released" fish were considered to be marked for the population estimate. Exclusive use of these "good releases" satisfied assumption one. Marks consisted of fin clips and could not be lost, satisfying assumption 2. There was no reason to believe that assumption 3-5 were not met. Because fish marked were angled from a pool within 100 meters of the trap, it is likely that only negligible numbers would not be returning to Western Arm Brook. Hence while some assumptions may not have been completely met, these small violations are not likely to have appreciably biased the result.

Because all angling was restricted to hook and release in these years, these estimates plus the number captured in the fence trap prior to marking were considered to represent spawning escapement to Western Arm Brook in 1985 and 1986. Total returns to Western Arm Brook included spawning escapement estimates plus "poor released" marked fish (Table 27).

In 1987, the location of the trap was moved 100 meters upstream to the head of the riffles section above the angling pool. This appears to have somewhat alleviated the problem of inhibiting fish movement in low water. Although low water appears to have delayed the peak of adult returns to late September, no fish were observed below the fence when it was removed at the end of October as in 1985 and 1986. Hence low water levels do not appear to have affected overall returns to Western Arm Brook in 1987. Investigation of flow rates in previous years is required to determine if low water may have been a factor influencing returns from 1971-1984.

## RESULTS

### GULF REGION

Commercial landings of all salmon by number exceeded those in 1986 by 12%, the mean 1984-86 catch by 75% and were the highest since 1981. Landings of small salmon exceeded those in 1986 by 9% and the mean catch since 1984 by 74% and were the highest since 1976. Landings of large salmon exceeded 1986 by 20%, the mean catch since 1984 by 77%, and were the highest since 1983. The J2 fishery has been closed since 1984. The commercial catch consisted of 75% small salmon (Table 4).

The largest commercial catch of small and large salmon was in Area K for insular Newfoundland. However, the large salmon catch in Southern Labrador was three times Area K (Tables 8, 13).

Recreational catches of all salmon were 90% of 1986 and 92% of the five and ten year means. Catches of 1SW salmon were 92% of 1986 and 94% of the five and ten year means. Catch per unit effort (CPUE) was equivalent to 1986 and five year mean (Table 14).

The largest recreational catch of 1SW salmon was in Area L, while Area K has the greatest five year mean. Areas K and O(50) recorded the highest catches of MSW salmon. Other than the Humber River (3011 1SW salmon) the greatest 1SW salmon catch was in River of Ponds (1522) Area M. The greatest MSW salmon catches were Grand Codroy (181 hooked and released) and Pinware River (193 retained) (Table 25).

### **SALMON FISHING AREA 12**

Statistical Area J2 comprises all of SFA 12. The commercial fishery has been closed in SFA 12 since 1984 (Table 5). Recreational catch of 1SW salmon has declined each year since 1984. 1SW salmon catch in 1987 was 88% of 1986, 67% of five, and 85% of ten year means. The number of MSW salmon hooked and released has changed little since 1985 (Table 15).

### **SALMON FISHING AREA 13**

Commercial landings of 1SW salmon were 85% of 1986, but 60% above five and 70% above ten year means. The difference from 1986 was primarily the result of a low 1SW salmon catch in Area L (60% of 1986), while 1SW salmon catches in Area K were 9% above 1986. However in both these Areas, 1987 1SW salmon catch exceeded five and ten year means. MSW salmon landings were also below 1986 but above five and ten year means. As for 1SW salmon, the greatest decline was in Area L, where 1987 catch was 73% of five and 79% of ten year means. Area K MSW salmon catch was 53% above five and 42% above ten year means (Tables 6,8,9).

The commercial catch for SFA 13 consisted of 84% 1SW salmon. Area K accounted for 65% of the 1SW and 81% of the MSW commercial salmon catches in SFA 13 (Tables 6, 8, 9). Since 1985 SFA 13 has accounted for 45-58% of Gulf Region Newfoundland 1SW commercial salmon catch. However, its proportion of MSW commercial salmon catch has declined from 64 to 25% since 1985 (Table 26).

Recreational catches of all salmon were 78% of 1986, and 80% of five and ten year means. Catches of 1SW salmon were 80% of 1986, five, and ten year means. This decline was similar in both Areas K and L. MSW salmon hooked and released were 50% of 1986, 70% of five and 56% of ten year means. As for 1SW catch this decline was similar in both Areas K and L. CPUE was only slightly lower than 1986 and five year means (Tables 16, 18, 19).

The Grand Codroy accounted for most of the 1SW and MSW recreational salmon catch in Area K, while the Humber is the principal angling river in Area L (Table 25). Areas K and L each accounted for 50% of the 1SW catch

but most (63%) of the MSW salmon were caught in Area K of SFA 13's recreational fishery. Since 1985 SFA 13 has accounted for 45-51% of the 1SW and 54-69% of the MSW recreational salmon catch in the Gulf Region (Table 26).

Total adult returns to Hughes Brook fence including removals for broodstock and fish estimated to be holding below upon its removal, and smolts counted downstream were the highest since 1984 (Table 24).

#### SALMON FISHING AREA 14

Commercial landings of all salmon by number were 48% above 1986, 83% above five and 53% above ten year means. Landings of small salmon were 44% above 1986, 79% above five, and 60% above ten year means. This increase occurred in all Areas except Area N. Large salmon catches were 58% greater than 1986, 94% greater than five and 38% above ten year means. Large salmon catches were below 1986 in Areas N and A(01) but above in Area M and O(50). In Area O(50) large salmon catch increased by 96% for the largest since 1978 (Tables 7, 10-13).

The commercial catch of SFA 14 was 69% small salmon (Table 7). Area M accounted for 41% and Area O(50) 35% of the small commercial salmon catch. Area O(50) accounts for 74% of the large commercial salmon catch in SFA 14, although Area M accounts for 69% of the large salmon catch in the insular Newfoundland portion of SFA 14 (Tables 7, 10-13). Since 1985, SFA 14 has accounted for 42-55% of small and 36-75% of large commercial salmon catch in the Gulf Region. The proportion of small salmon catch has steadily declined in Area N but increased in Area O(50) for both small and large salmon (Table 26).

Recreational catches of all salmon were 6% above 1986, 15% above five and 8% above ten year means. Catches of 1SW salmon were 7% above 1986, 10% above five, and 15% above ten year means. 1SW salmon catches in Areas M and A(01) were below 1986, in Area N were similar but in Area O(50) were 76% above 1986. MSW salmon catches including hook and release were 93% of 1986, but were above (24%) the five, and below (77%) the ten year means. MSW salmon could only be retained in Area O(50) where the catches were the highest since 1981. CPUE was similar to 1986, above five year, and equivalent to ten year means (Tables 17, 20-23).

River of Ponds accounted for the greatest proportion of 1SW recreational catch, while the Pinware River accounted for most MSW salmon in SFA 14 (Table 25). Since 1985, SFA 14 has accounted for 42-49% of the 1SW and 28-42% of the MSW salmon catch (Table 26).

1SW returns to Lomond River fishway were equal to 1986, but MSW were 30% of 1986. 1SW returns to Torrent River fishway were 89% and MSW were 76% of 1986 (Table 24). MSW salmon returning to these facilities are usually repeat spawning 1SW salmon.

Returns to Western Arm Brook fence were the highest since 1983. Total returns to Western Arm Brook, including angled fish were 447 1SW and 1MSW salmon (Table 24).



## FORECASTS

For Area O(50), large commercial salmon catch can be predicted from small commercial salmon catch in the previous year (Fig. 4). The years 1975-1986 were used for this analysis. The 1987 small salmon catch in this area was 10,975. The predicted 1988 large salmon catch is 12,932 for 46,968 kg. This catch would be similar to 1987 and above five and ten year means.

For Area N, spawning escapement was calculated considering the number of 1SW adults counted at the Western Arm Brook fence (using adjusted values for 1985, 1986) as 10% of the total to all rivers in this Area (Chadwick 1983). This figure was added to commercial and recreational catches to obtain yearly total returns. Smolt counts at Western Arm Brook fence (year  $i$ ), since 1971, were used to predict total returns to Area N (year  $i+1$ ). Thirteen of the 16 years examined fit a second order linear regression (Fig. 5). The reason for this fit is probably related to the decline in smolt-size with increasing juvenile density (Chadwick 1987).

The 1987 smolt count at Western Arm Brook fence was 17,029. The predicted total 1SW salmon returns to Area N in 1988 are 13,750. This figure would be similar to 1987 returns. Using this method the actual total number of returns would be within 30% of the predicted value for 13/16 of the years examined. Additional research regarding the effects of smolt size on recruitment is required to better explain the mechanism responsible for the shape of the curve in Figure 5.

For Area M, returns to Torrent River fishway were used to calculate an estimated spawning escapement. The drainage area for all scheduled rivers in Area M is 4,107 km. The drainage area for Torrent River is 15% (619 km) of this area. Returns to Torrent River fishway were expanded by this factor to determine spawning escapement. As for Area N, total returns to Area M were calculated by adding estimated spawning escapement, sports and commercial catch. Counts of Western Arm Brook smolts (year  $i$ ) were used to predict total 1SW salmon returns to Area M (year  $i + 1$ ). All years since 1974 were used in this analysis (Fig. 6). The smolt migration in 1984 was beyond the range of every other year in the data set and may be on the descending portion of a dome shaped curve as for Area N. For these two reasons, the 1984, 1985 pair was excluded from this analysis. The 1987 smolt migration at Western Arm Brook was 17,029. Total returns to Area M are predicted to be 30,305. This figure would be similar to 1987 returns.

Two factors suggest that this model be considered as tentative. Firstly, there is a potential source of bias in using an enhanced river such as Torrent to estimate spawning escapement for Area M. Secondly, additional points at high smolt densities are required to determine if the model developed for Western Arm Brook, Area N is appropriate to apply to Torrent River, Area M.

## DISCUSSION

Overall 1987 was a similar year to 1986 in the commercial fishery. The increase in catches observed in 1986 have continued for the second year. Even in Area L, where small salmon catches were down from 1986, they still exceeded 5 and 10 year means.

The recreational fishery also had total catches of 1SW salmon similar to 1986. In contrast to commercial catches these are not above 5 and 10 year means. Total catches for the last three years have been below those for 1984. Only catches in SFA 14 were above 5 and 10 year means.

Peaks in angling catch usually occur during July on most West Newfoundland rivers (Ash and O'Connell 1986). In 1986 and 1987 July mean monthly discharges were well below previous levels, particularly in AREAS J2, K and L (Table 3b) and several rivers in these areas were closed to angling for part of the summer in 1987 (Table 25). Hence, low water may partly explain lower than average catches in 1986 and 1987.

While closure may have decreased recreational catch, low water has also affected run timing. The run at Western Arm Brook did not reach its maximum until the last week of September this year, an appreciable delay from typical July-August peaks. Mark and recapture experiments in 1985 and 1986 suggest that as many fish were below the fence, when it was removed, as entered the river during these years of low water. Moving the Western Arm Brook fence upstream in 1987 to increase attraction flow, seems to have alleviated the inhibitory effects of low water observed in 1985 and 1986.

In contrast Torrent River does not appear to have been adversely affected by these low water levels. The large lake upstream from the fishway may provide a sufficient reservoir to alleviate otherwise severe effects from low water.

Forecasts for Areas O(50) and N predict a year similar to 1987 for 1988.

## REFERENCES

- Anon. 1987. Surface Water Data Atlantic Provinces 1986. Environment Canada, Inland Waters Directorate, Ottawa, Canada, 1987, 131 p.
- Anon. 1986. Surface Water Data Atlantic Provinces 1985. Environment Canada, Inland Waters Directorate, Ottawa, Canada, 1986, 127 p.
- Anon. 1985. Historical Streamflow Summary Atlantic Provinces to 1984. Environment Canada, Inland Waters Directorate, Ottawa, Canada, 236 p.
- Ash, E.G.M. and M.F. O'Connell. 1986. Atlantic salmon fishery in Newfoundland and Labrador, Commercial and Recreational 1983. Can. Fish. Ag. Sci. Data Report No. 608: v + 304 p.

- Chadwick, E.M.P. 1987. Causes of variable recruitment in a small Atlantic salmon stock. Am. Fish. Symp. 1: 390-401.
- Chadwick, E.M.P. 1983. Prediction of 1SW Atlantic salmon returns Statistical Area N, 1984. CAFSAC Res. Doc. 83/84:8 p.
- Peppar, J.L. 1984. Assessment of Atlantic salmon stocks in Statistical Areas K and L, Western Newfoundland, 1983. CAFSAC Res. Doc. 84/19:36 p.
- Peppar, J.L., and C.C. Mullins. 1985. Status of Atlantic salmon stocks in Statistical Areas K and L, Western Newfoundland, 1984. CAFSAC Res. Doc. 85/86:20 p.
- Peppar, J.L., and C.C. Mullins. 1987. Status of Atlantic salmon stocks, Gulf Region, Newfoundland and Labrador, 1986. CAFSAC Res. Doc. 87/4:37 p.
- Reddin, D.G., and P.B. Short. 1981. The 1976 Newfoundland and Labrador Atlantic salmon commercial landings. Can. Tech. Rep. Fish. Aquat. Sci. 1007:105 p.
- Ricker, W.E. 1975. Computation and interpretation of biological statistics of fish populations. Bull. Fish. Res. Board Can. No. 191. 382 p.

**Table 1. Boundaries of Salmon Fishing Areas, Statistical Areas and Statistical Sections, Gulf Region, Newfoundland and Labrador.**

Salmon Fishing Area	Statistical Area	Statistical Section	Boundary
12	J <sub>2</sub>	38	Burgeo to Rose Blanche Point (commercial fishery)
12	J <sub>2</sub>	38	La Poile River to Rose Blanche Point (recreational fishery)
12	J <sub>2</sub>	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. Scheduled Atlantic salmon rivers, Gulf Region, Newfoundland and Labrador.

Salmon Fishing Area 12		Salmon Fishing Area 13		Salmon Fishing Area 14	
Statistical Area J <sub>2</sub>	Drainage area (km <sup>2</sup> )	Statistical Area K	Drainage area (km <sup>2</sup> )	Statistical Area M	Drainage area (km <sup>2</sup> )
		Bear Cove Brook	30	Trout River	254
La Poile River	588	Little Codroy River	224	Lomond River	470
Farmers Brook	89	Grand Codroy River	956	Deer Arm Brook	126
Garia Brook	228	Highlands River	183	Western Brook	192
Northwest River	119	Crabbes Brook	551	Parsons Pond River	388
Grandys Brook	273	Barachois Brook	241	Portland Creek	985
Isle aux Morts River	214	Robinsons River	439	River of Ponds	861
Grand Bay River	134	Fischells Brook	360	Little Brook Pond	76
Southwest Brook	49	Flat Bay Brook	635	Torrent River	619
		Little Barachois Brook	354	Big East River	136
		Southwest > Bottom Brook	814		
		Harrys River	816		
		Statistical Area L		Statistical Area N	
		Fox Island River	194	Castors River	544
		Serpentine River	433	St. Geneviève River	318
		Cooks Brook	101	Western Arm Brook	149
		Humber River	7,679	Eastern Arm Brook	43
		Hughes Brook	132	Eddies Cove Brook	90
		Goose Arm Brook	212	Big Brook	212
				Watts Bight Brook	95
				Statistical Area A(01)	
				Pensons Brook	65
				Parker River	46
				Bartlett's River	40
				Upper Brook	39
				East River	61
				Statistical Area O(50)	
				Forteau River	389
				L'Anse-A-Loup River	130
				Pinware River	2,486

Table 3. Mean monthly (June-October) water discharge in cubic metres per second for Ste. Genevieve River, Newfoundland, Station 02YA001 (1980-1986) and Upper Humber River, Newfoundland, Station 02YL001 (1980-1987).

	June	July	August	September	October
A) Ste. Genevieve River					
1980	18.2	12.0	9.1	8.0	10.1
1981	10.6	5.7	5.8	3.7	6.9
1982	22.1	10.4	5.9	6.0	4.4
1983	11.8	7.1	9.2	5.4	6.7
1984	27.8	15.8	7.8	3.5	2.4
Mean 1980-1984	18.1	10.2	7.6	5.3	6.1
1985	39.2	14.1	5.6	4.9	4.6
1986	12.6	5.2	2.5	1.9	2.3
Mean 1985-1986	25.9	9.7	4.1	3.4	3.5
B) Upper Humber River					
1980	184.0	79.4	66.8	70.2	108.0
1981	99.6	28.4	60.2	34.2	131.0
1982	201.0	93.5	43.6	69.4	64.1
1983	71.2	40.8	92.9	39.4	67.7
1984	205.0	37.6	25.6	56.7	41.7
Mean 1980-1984	152.2	55.9	57.8	54.0	82.5
1985	264.0	56.3	10.2	30.5	36.5
1986	64.9	11.4	26.0	20.5	47.9
1987	47.8	17.6	4.1	40.7	82.0
Mean 1985-1987	125.6	28.4	13.4	30.6	55.5

Table 4. Commercial landings of small salmon and large salmon in the Gulf Region, Newfoundland and Labrador, 1975-86. Weight in kilograms. \* Area J<sub>2</sub> fishery closed 1984-87, thus years 1984-87 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*	41,087	22,047	21,496	4,650	62,583	26,697	65.65	81.66
1986*	89,668	51,216	68,973	15,675	158,641	66,891	56.52	76.57
1987*	111,140	56,074	86,748	18,840	197,888	74,914	58.88	74.85
<b>1984-86</b>								
Mean	58,059.33	32,183.33	48,435.67	10,645.00	106,495.00	42,828.33	55.92	74.99
S.D.	27,398.82	16,494.43	24,377.42	5,575.49	48,555.47	21,238.38	10.05	7.59
n	3	3	3	3	3	3	3	3
<b>1981-83</b>								
Mean	69,409.00	38,239.33	117,266.67	25,525.00	186,675.67	63,764.33	37.35	60.01
S.D.	5,798.83	2,753.24	19,147.18	2,599.52	24,036.95	5,094.29	2.38	1.03
n	3	3	3	3	3	3	3	3
<b>1976-83</b>								
Mean	74,253.13	41,551.63	168,823.38	36,409.13	246,826.50	77,960.75	33.42	54.54
S.D.	26,811.94	11,761.63	80,924.10	17,218.30	95,292.29	25,441.50	9.20	9.99
n	8	8	8	8	8	8	8	8

**Table 5. Commercial landings of small salmon and large salmon in Salmon Fishing Area 12, Gulf Region, Newfoundland and Labrador, 1975-87. 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	---	---	---	---	---	---	---	---
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<u>1975-83</u>								
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	3	3	3	3	3	3	3	3



**Table 6. Commercial landings of small salmon and large salmon in Salmon Fishing Area 13, Gulf Region, Newfoundland and Labrador, 1975-87. 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
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<u>1982-86</u>								
Mean	27,485.80	15,684.60	16,011.20	3,671.40	43,497.00	19,356.00	62.63	80.77
S.D.	13,828.20	8,009.51	6,787.24	1,723.87	20,544.03	9,709.14	2.92	2.07
n	5	5	5	5	5	5	5	5
<hr/>								
<u>1977-86</u>								
Mean	26,934.00	14,849.20	17,061.10	3,774.70	43,995.10	18,623.90	61.89	79.61
S.D.	10,983.48	5,975.89	8,697.07	1,924.58	16,688.37	7,093.08	11.98	8.43
n	10	10	10	10	10	10	10	10

**Table 7. Commercial landings of small salmon and large salmon in Salmon Fishing Area 14, Gulf Region, Newfoundland and Labrador, 1975-87. 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	22,475	11,903	7,834	1,652	30,309	13,555	74.15	87.81
1986	38,203	21,541	41,114	8,971	79,317	30,512	48.16	70.60
1987	66,613	30,964	65,579	14,180	132,192	45,144	50.39	68.59
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<b>1982-86</b>								
Mean	32,172.60	17,332.80	33,362.20	7,289.80	65,534.80	24,622.60	50.89	70.39
S.D.	12,831.65	6,977.41	14,521.58	3,217.92	22,482.79	8,841.98	16.62	13.69
n	5	5	5	5	5	5	5	5
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<b>1977-86</b>								
Mean	36,408.30	19,265.50	47,727.90	10,212.30	84,136.20	29,477.80	46.54	66.38
S.D.	11,118.31	5,778.04	27,575.54	5,492.57	30,820.03	8,420.35	15.86	13.26
n	10	10	10	10	10	10	10	10

**Table 8. Commercial landings of small salmon and large salmon in Statistical Area K, Gulf Region, Newfoundland and Labrador, 1975-86. 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	70.37	81.20
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<u>1982-86</u>								
Mean	15,152.00	9,081.20	10,623.20	2,482.60	25,775.20	11,563.80	59.37	78.99
S.D.	5,744.56	3,499.15	5,212.89	1,293.32	10,731.48	4,734.24	4.86	3.52
n	5	5	5	5	5	5	5	5
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<u>1977-86</u>								
Mean	16,390.00	9,321.10	11,926.90	2,669.80	28,316.90	11,990.90	59.42	78.15
S.D.	5,278.96	2,725.64	6,866.14	1,495.41	9,766.13	3,513.21	13.17	8.99
n	10	10	10	10	10	10	10	10

**Table 9. Commercial landings of small salmon and large salmon in Statistical Area L, Gulf Region, Newfoundland and Labrador, 1975-87. 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
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<u>1982-86</u>								
Mean	12,333.80	6,603.40	5,388.00	1,188.80	17,721.80	7,792.20	67.72	83.64
S.D.	8,244.41	4,573.54	2,106.58	542.64	10,074.53	5,065.26	6.33	3.66
n	5	5	5	5	5	5	5	5
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<u>1977-86</u>								
Mean	10,544.00	5,528.10	5,134.20	1,104.90	15,678.20	6,633.00	66.44	82.17
S.D.	6,485.19	3,559.13	2,416.96	548.65	8,269.68	3,965.68	10.89	8.10
n	10	10	10	10	10	10	10	10

**Table 10. Commercial landings of small salmon and large salmon in Statistical Area M, Gulf Region, Newfoundland and Labrador, 1975-87. 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
<b>1982-86</b>								
Mean	11,071.60	6,107.20	5,299.40	1,167.60	16,371.00	7,274.80	64.19	80.49
S.D.	7,523.97	4,184.82	1,941.29	447.22	8,116.96	4,303.00	17.65	12.52
n	5	5	5	5	5	5	5	5
<b>1977-86</b>								
Mean	12,908.60	7,163.10	5,541.20	1,207.90	18,449.80	8,370.90	67.19	80.79
S.D.	7,144.69	4,001.26	3,510.43	778.94	6,264.18	3,687.90	21.49	15.58
n	10	10	10	10	10	10	10	10

Table 11. Commercial landings of small salmon and large salmon in Statistical Area N, Gulf Region, Newfoundland and Labrador, 1975-87. 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	6,213	4,144	947	25,258	7,160	83.59	86.77
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<u>1982-86</u>								
Mean	10,771.60	5,782.00	3,498.80	844.60	14,270.40	6,626.60	74.57	86.63
S.D.	6,966.48	3,776.45	2,461.44	619.59	8,643.60	4,212.52	9.74	5.54
n	5	5	5	5	5	5	5	5
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<u>1977-86</u>								
Mean	10,430.60	5,521.00	3,945.70	1,041.10	14,376.30	6,562.10	70.27	82.40
S.D.	5,826.29	3,074.92	2,224.88	538.11	7,014.65	3,407.04	14.41	8.08
n	10	10	10	10	10	10	10	10

Table 12. Commercial landings of small salmon and large salmon in Statistical Area A(01), Gulf Region, Newfoundland and Labrador, 1975-87. 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
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<u>1982-86</u>								
Mean	1,166.60	640.40	466.80	108.80	1,633.40	749.20	74.42	86.89
S.D.	267.46	154.17	456.35	114.86	460.48	222.24	20.60	11.07
n	5	5	5	5	5	5	5	5
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<u>1977-86</u>								
Mean	1,287.90	672.10	789.80	172.30	2,077.70	844.40	62.79	77.91
S.D.	690.33	345.27	499.06	107.88	795.13	358.42	22.98	16.19
n	10	10	10	10	10	10	10	10

**Table 13. Commercial landings of small salmon and large salmon in Statistical Area 0(50), Gulf Region, Newfoundland and Labrador, 1975-87. 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	5,256	2,628	3,979	829	9,235	3,457	56.91	76.02
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
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<u>1982-86</u>								
Mean	9,162.80	4,803.20	24,097.20	5,168.80	33,260.00	9,972.00	31.60	50.14
S.D.	4,976.38	2,807.33	11,574.18	2,548.70	13,704.57	4,174.13	17.37	20.52
n	5	5	5	5	5	5	5	5
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<u>1977-86</u>								
Mean	11,781.30	5,909.30	37,450.90	7,791.00	49,232.20	13,700.30	27.48	45.72
S.D.	5,915.14	2,904.34	23,548.52	4,744.87	27,787.86	6,927.45	13.31	15.79
n	10	10	10	10	10	10	10	10



Table 14. Recreational catch of Atlantic salmon in Gulf Region, Newfoundland and Labrador, 1953-1987.

Year	Effort (rod-days)	1SW ( < 63 cm)	MSW ( > 63 cm)	Total catch	CUE	Percent 1SW
1953	15,069	6,045	1,754	7,799	0.52	.
1954	11,598	3,988	1,341	5,329	0.46	82
1955	13,876	5,113	1,316	6,429	0.46	75
1956	19,866	6,743	1,952	8,695	0.44	72
1957	16,041	9,790	2,567	12,357	0.77	72
1958	18,126	8,741	2,625	11,366	0.63	79
1959	18,968	8,212	2,063	10,275	0.54	81
1960	18,464	8,958	1,395	10,353	0.56	85
1961	22,765	9,366	2,132	11,498	0.51	81
1962	27,730	13,478	1,911	15,389	0.55	83
1963	34,554	17,780	3,415	21,195	0.61	80
1964	37,861	20,483	3,643	24,126	0.64	83
1965	34,160	17,702	3,112	20,813	0.61	87
1966	34,680	15,752	2,812	18,564	0.54	86
1967	36,391	14,266	2,784	17,050	0.47	85
1968	37,804	14,822	1,870	16,692	0.44	88
1969	43,726	20,039	2,290	22,329	0.51	87
1970	48,537	16,540	2,275	18,815	0.39	90
1971	39,630	14,683	1,635	16,318	0.41	91
1972	38,089	12,191	1,314	13,505	0.35	92
1973	45,293	17,657	2,191	19,848	0.44	85
1974	43,018	11,707	1,333	13,040	0.30	93
1975	44,896	18,400	1,150	19,550	0.44	91
1976	54,890	20,559	1,041	21,600	0.39	95
1977	46,697	14,639	2,162	16,801	0.36	90
1978	35,469	9,469	1,130	10,599	0.30	93
1979	34,528	14,221	301	14,522	0.42	97
1980	40,181	13,414	1,539	14,953	0.37	90
1981	47,945	17,940	1,037	18,977	0.40	93
1982	47,448	17,155	797	17,952	0.38	96
1983	47,670	12,804	859	13,663	0.30	95
1984	46,236	15,487	649	16,136	0.35	95
1985	40,911	11,117	(315) 100	11,532	0.28	97
1986	49,162	14,385	(825) 184	15,394	0.31	92
1987	42,907	13,277	(410) 223	13,910	0.32	96
<u>1982-86</u>						
$\bar{X}$	46,285.40	14,189.60	745.80	14,935.40	0.32	95.00
S.D.	3,179.24	2,338.58	225.56	2,447.13	0.04	1.87
n	5	5	5	5	5	5
<u>1977-86</u>						
$\bar{X}$	43,624.70	14,063.10	989.80	15,052.90	0.35	94.40
S.D.	5,426.84	2,557.56	545.00	2,637.47	0.05	2.32
n	10	10	10	10	10	10

Percent 1SW is calculated by year of smolt migration

Numbers in parentheses are released fish.

Table 15. Recreational catch of Atlantic salmon in Salmon Fishing Area 12, Gulf Region, Newfoundland and Labrador, 1953-1987.

Year	Effort (rod-days)	1SW (< 63 cm)	MSW (> 63 cm)	Total catch	CUE	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	1,636	396	23	419	0.26	96
1959	899	428	87	515	0.57	82
1960	1,526	611	14	625	0.41	97
1961	1,272	577	101	678	0.52	86
1962	1,449	843	67	910	0.63	90
1963	2,191	1,045	60	1,105	0.50	93
1964	1,735	886	73	959	0.55	96
1965	2,175	1,113	200	1,313	0.58	82
1966	1,489	873	65	938	0.63	94
1967	1,901	576	65	641	0.34	93
1968	2,274	751	77	828	0.36	88
1969	1,979	918	85	1,003	0.51	90
1970	1,276	749	80	829	0.65	92
1971	1,406	454	20	474	0.34	97
1972	1,482	928	16	944	0.64	97
1973	1,558	646	25	671	0.43	97
1974	1,423	658	13	671	0.47	98
1975	1,204	510	20	530	0.44	97
1976	926	297	5	302	0.33	99
1977	1,238	558	48	606	0.49	86
1978	1,301	366	20	386	0.30	97
1979	1,711	733	10	743	0.43	97
1980	2,173	820	29	849	0.39	96
1981	2,035	1,060	17	1,077	0.53	98
1982	2,810	1,555	15	1,570	0.56	99
1983	2,648	667	50	717	0.27	97
1984	3,590	1,922	68	1,990	0.55	91
1985	3,722	1,097	(30)	1,127	0.30	98
1986	3,430	938	(33)	971	0.28	97
1987	2,167	829	(27)	856	0.40	97
<u>1982-86</u>						
$\bar{X}$	3,240.00	1,235.80	39.20	1,275.00	0.39	96.00
S.D.	481.22	501.06	20.34	505.95	0.15	2.83
n	5	5	5	5	5	5
<u>1977-86</u>						
$\bar{X}$	2,465.80	971.60	32.00	1,003.60	0.41	96.70
S.D.	920.66	468.90	18.35	474.80	0.12	2.16
n	10	10	10	10	10	10

Percent 1SW is calculated by year of smolt migration

Numbers in parentheses are released fish.

Table 16. Recreational catch of Atlantic salmon in Salmon Fishing Area 13, Gulf Region, Newfoundland and Labrador, 1953-1987.

Year	Effort (rod-days)	1SW (< 63 cm)	MSW (> 63 cm)	Total catch	CUE	Percent 1SW
1953	12,115	4,507	1,296	5,803	0.48	.
1954	8,589	2,572	866	3,438	0.40	84
1955	8,253	3,660	810	4,470	0.54	76
1956	16,130	4,606	1,449	6,055	0.38	72
1957	12,244	6,781	1,914	8,695	0.71	71
1958	11,765	5,091	1,961	7,052	0.60	78
1959	13,305	4,871	1,307	6,178	0.46	80
1960	12,439	6,094	927	7,021	0.56	84
1961	14,785	5,977	1,227	7,204	0.49	83
1962	18,227	9,424	1,469	10,893	0.60	80
1963	22,261	12,660	2,539	15,199	0.68	79
1964	26,647	14,346	2,528	16,874	0.63	83
1965	22,914	10,515	1,929	12,444	0.54	88
1966	21,969	8,076	1,883	9,959	0.45	85
1967	22,219	8,109	1,844	9,953	0.45	81
1968	22,321	8,365	1,149	9,514	0.43	88
1969	28,830	12,147	1,624	13,771	0.48	84
1970	34,460	9,739	1,643	11,382	0.33	88
1971	29,028	9,522	1,045	10,567	0.36	90
1972	27,614	8,401	1,103	9,504	0.34	90
1973	30,955	10,268	1,392	11,660	0.38	86
1974	29,313	7,189	916	8,105	0.28	92
1975	32,253	12,003	886	12,889	0.40	89
1976	32,922	10,383	626	11,009	0.33	95
1977	24,474	6,712	1,049	7,761	0.32	91
1978	19,686	5,289	855	6,144	0.31	89
1979	16,383	6,009	113	6,122	0.37	98
1980	21,313	7,913	993	8,906	0.42	86
1981	23,839	9,300	663	9,963	0.42	92
1982	25,246	9,566	595	10,161	0.40	94
1983	25,473	6,337	610	6,947	0.27	94
1984	22,152	7,771	309	8,080	0.36	95
1985	20,137	5,302	(257) ---	5,559	0.28	97
1986	25,707	7,346	(692) ---	8,038	0.31	88
1987	20,761	5,926	(342) ---	6,268	0.30	96
<u>1982-86</u>						
$\bar{X}$	23,743.00	7,264.40	492.60	7,757.00	0.32	94.00
S.D.	2,482.12	1,602.48	195.73	1,691.88	0.06	3.54
n	5	5	5	5	5	5
<u>1977-86</u>						
$\bar{X}$	22,441.00	7,154.50	613.60	7,768.10	0.35	92.90
S.D.	3,069.00	1,509.18	311.14	1,595.49	0.06	4.04
n	10	10	10	10	10	10

Percent 1SW is calculated by year of smolt migration

Numbers in parentheses are released fish.

Table 17. Recreational catch of Atlantic salmon in Salmon Fishing Area 14, Gulf Region, Newfoundland and Labrador, 1953-1987.

Year	Effort (rod-days)	1SW (< 63 cm)	MSW (> 63 cm)	Total catch	CUE	Percent 1SW
1953	2,480	1,300	390	1,690	0.68	.
1954	2,629	1,254	439	1,693	0.64	75
1955	5,479	1,313	495	1,808	0.33	73
1956	3,036	1,862	486	2,348	0.77	75
1957	2,974	2,463	635	3,098	1.04	75
1958	4,725	3,254	641	3,895	0.82	79
1959	4,764	2,913	669	3,582	0.75	83
1960	4,499	2,253	454	2,707	0.60	87
1961	6,708	2,812	804	3,616	0.54	74
1962	8,054	3,211	375	3,586	0.45	88
1963	10,102	4,075	816	4,891	0.48	80
1964	9,479	5,251	1,042	6,293	0.66	80
1965	9,071	6,074	983	7,056	0.78	84
1966	11,222	6,803	864	7,667	0.68	88
1967	12,271	5,581	875	6,456	0.53	89
1968	13,209	5,706	644	6,350	0.48	90
1969	12,917	6,974	581	7,555	0.58	91
1970	12,801	6,052	552	6,604	0.52	93
1971	9,196	4,707	570	5,277	0.57	91
1972	8,993	2,862	195	3,057	0.34	96
1973	12,780	6,743	774	7,517	0.59	79
1974	12,282	3,860	404	4,264	0.35	94
1975	11,439	5,887	244	6,131	0.54	94
1976	21,042	9,879	410	10,289	0.49	93
1977	20,985	7,369	1,065	8,434	0.40	90
1978	14,482	3,814	255	4,069	0.28	97
1979	16,434	7,479	178	7,734	0.47	96
1980	16,695	4,681	517	5,198	0.31	94
1981	22,071	7,580	357	7,937	0.36	93
1982	19,392	6,034	187	6,221	0.32	98
1983	19,549	5,800	199	5,999	0.31	97
1984	20,494	5,794	272	6,066	0.30	96
1985	17,052	4,718	(28) 100	4,846	0.28	98
1986	20,025	6,101	(100) 184	6,385	0.32	94
1987	19,979	6,522	(41) 223	6,786	0.34	96
<u>1982-86</u>						
X̄	19,302.40	5,689.40	214.00	5,903.40	0.31	96.20
S.D.	1,329.96	560.12	64.45	609.61	0.02	1.48
n	5	5	5	5	5	5
<u>1977-86</u>						
X̄	18,717.90	5,937.00	344.20	6,281.20	0.34	95.90
S.D.	2,413.33	1,281.23	276.19	1,395.88	0.06	3.47
n	10	10	10	10	10	10

Percent 1SW is calculated by year of smolt migration

Numbers in parentheses are released fish.

Table 18. Recreational catch of Atlantic salmon in Statistical Area K, Gulf Region, Newfoundland and Labrador, 1953-1987.

Year	Effort (rod-days)	1SW (< 63 cm)	MSW (> 63 cm)	Total catch	CUE	Percent 1SW
1953	8,040	3,118	1,066	4,184	0.52	.
1954	3,994	1,578	670	2,248	0.56	82
1955	5,696	2,126	617	2,743	0.48	72
1956	8,213	3,187	1,166	4,353	0.53	65
1957	8,720	4,580	1,621	6,201	0.71	66
1958	7,699	3,172	1,551	4,723	0.61	75
1959	8,824	2,664	928	3,592	0.41	77
1960	8,054	3,935	603	4,538	0.56	82
1961	10,244	3,930	967	4,897	0.48	80
1962	12,834	6,485	1,133	7,618	0.59	78
1963	15,743	8,420	2,240	10,660	0.68	74
1964	16,849	8,956	1,878	10,834	0.64	82
1965	14,721	6,127	1,544	7,671	0.52	85
1966	11,977	3,648	1,450	5,098	0.43	81
1967	15,534	5,608	1,577	7,185	0.46	70
1968	15,114	5,615	987	6,602	0.44	85
1969	16,025	6,987	1,082	8,069	0.50	84
1970	19,612	6,153	1,049	7,202	0.37	87
1971	18,103	5,339	660	5,999	0.33	90
1972	15,803	4,218	871	5,089	0.32	86
1973	19,017	6,430	1,020	7,450	0.39	81
1974	18,946	4,322	744	5,066	0.27	90
1975	21,678	5,771	756	6,527	0.30	85
1976	20,964	5,121	554	5,675	0.27	91
1977	17,209	4,355	994	5,349	0.31	84
1978	11,084	2,327	597	2,924	0.26	88
1979	7,751	2,572	84	2,656	0.34	97
1980	12,316	4,213	673	4,886	0.40	79
1981	14,311	4,911	500	5,411	0.38	89
1982	15,417	5,045	469	5,514	0.36	91
1983	16,480	3,075	554	3,629	0.22	90
1984	14,783	4,847	262	5,109	0.35	92
1985	12,779	2,871	(246) ---	3,117	0.24	95
1986	16,588	3,819	(430) ---	4,249	0.26	87
1987	12,325	2,816	(216) ---	3,032	0.25	95
<u>1982-86</u>						
X	15,209.40	3,931.40	392.20	4,323.60	0.29	91.80
S.D.	1,552.96	993.60	134.01	997.22	0.06	3.42
n	5	5	5	5	5	5
<u>1977-86</u>						
X	13,871.80	3,803.50	480.90	4,284.40	0.31	90.30
S.D.	2,935.96	1,023.38	254.45	1,118.15	0.06	5.14
n	10	10	10	10	10	10

Percent 1SW is calculated by year of smolt migration

Numbers in parentheses are released fish.

Table 19. Recreational catch of Atlantic salmon in Statistical Area L, Gulf Region, Newfoundland and Labrador, 1953-1987.

Year	Effort (rod-days)	1SW ( < 63 cm)	MSW ( > 63 cm)	Total catch	CUE	Percent 1SW
1953	4,075	1,389	230	1,619	0.40	.
1954	4,595	994	196	1,190	0.26	88
1955	2,557	1,534	193	1,727	0.68	84
1956	7,917	1,419	283	1,702	0.21	84
1957	3,524	2,201	293	2,494	0.71	83
1958	4,066	1,919	410	2,329	0.57	84
1959	4,481	2,207	379	2,586	0.58	84
1960	4,385	2,159	324	2,483	0.57	87
1961	4,541	2,047	260	2,307	0.51	89
1962	5,393	2,939	336	3,275	0.61	86
1963	6,518	4,240	299	4,539	0.70	91
1964	9,798	5,390	650	6,040	0.62	87
1965	8,193	4,388	385	4,773	0.58	93
1966	9,992	4,428	433	4,861	0.49	91
1967	6,685	2,501	267	2,768	0.41	94
1968	7,207	2,750	162	2,912	0.40	94
1969	12,805	5,160	542	5,702	0.45	84
1970	14,848	3,586	594	4,180	0.28	90
1971	10,925	4,183	385	4,568	0.42	90
1972	11,811	4,183	232	4,415	0.37	95
1973	11,938	3,838	372	4,210	0.35	92
1974	10,367	2,867	172	3,039	0.29	96
1975	10,575	6,232	130	6,362	0.60	96
1976	11,958	5,262	72	5,334	0.45	99
1977	7,265	2,357	55	2,412	0.33	99
1978	8,602	2,962	258	3,220	0.37	90
1979	8,632	3,437	29	3,466	0.40	99
1980	8,997	3,700	320	4,020	0.45	91
1981	9,528	4,389	163	4,552	0.48	96
1982	9,829	4,521	126	4,647	0.47	97
1983	8,993	3,262	56	3,318	0.37	99
1984	7,369	2,924	47	2,971	0.40	99
1985	7,358	2,431	(11) ---	2,442	0.33	100
1986	9,119	3,527	(262) ---	3,789	0.42	90
1987	8,436	3,110	(126) ---	3,286	0.38	97
<u>1982-86</u>						
X̄	8,533.60	3,333.00	100.40	3,433.40	0.40	97.00
S.D.	1,114.69	780.21	99.48	838.05	0.05	4.06
n	5	5	5	5	5	5
<u>1977-86</u>						
X̄	8,569.20	3,351.00	132.70	3,483.70	0.40	95.80
S.D.	930.04	728.97	112.20	779.54	0.05	3.97
n	10	10	10	10	10	10

Percent 1SW is calculated by year of smolt migration

Numbers in parentheses are released fish.

Table 20. Recreational catch of Atlantic salmon in Statistical Area M, Gulf Region, Newfoundland and Labrador, 1953-1987.

Year	Effort (rod-days)	1SW (< 63 cm)	MSW (> 63 cm)	Total catch	CUE	Percent 1SW
1953	2,348	1,199	386	1,585	0.68	.
1954	2,409	1,079	310	1,389	0.58	79
1955	2,224	1,073	236	1,309	0.59	82
1956	2,569	1,616	269	1,885	0.73	80
1957	2,438	2,041	319	2,360	0.97	84
1958	4,074	2,517	573	3,090	0.76	78
1959	4,115	2,226	560	2,786	0.68	82
1960	3,810	1,676	397	2,073	0.54	85
1961	5,936	2,142	681	2,823	0.48	71
1962	6,946	2,119	298	2,417	0.35	88
1963	7,139	2,720	594	3,314	0.46	78
1964	5,726	2,896	570	3,466	0.61	83
1965	4,897	3,444	532	3,976	0.81	84
1966	6,122	3,395	441	3,836	0.63	89
1967	6,558	2,411	342	2,753	0.42	91
1968	6,784	1,781	178	1,959	0.29	93
1969	6,741	2,940	226	3,166	0.47	89
1970	6,044	1,532	126	1,658	0.27	96
1971	4,818	1,739	200	1,939	0.40	88
1972	4,969	1,085	81	1,166	0.23	96
1973	6,122	2,634	194	2,828	0.46	85
1974	5,672	1,300	98	1,398	0.25	96
1975	5,458	2,056	74	2,130	0.39	95
1976	12,781	4,275	66	4,341	0.34	97
1977	12,350	3,151	454	3,605	0.29	90
1978	8,718	1,800	59	1,859	0.21	98
1979	9,805	3,171	46	3,217	0.33	98
1980	10,202	2,016	148	2,164	0.21	96
1981	13,767	3,224	98	3,322	0.24	95
1982	11,267	2,554	53	2,607	0.23	98
1983	10,832	1,721	51	1,772	0.16	98
1984	11,483	2,996	84	3,080	0.27	95
1985	9,423	2,213	(26) ---	2,239	0.24	99
1986	11,022	3,263	(96) ---	3,359	0.30	96
1987	10,565	2,894	(35) ---	2,929	0.28	99
<u>1982-86</u>						
$\bar{X}$	10,805.40	2,549.40	62.00	2,611.40	0.24	97.40
S.D.	811.00	614.03	28.01	636.75	0.05	1.82
n	5	5	5	5	5	5
<u>1977-86</u>						
$\bar{X}$	10,886.90	2,610.90	111.50	2,722.40	0.25	97.20
S.D.	1,469.82	625.37	125.28	676.90	0.05	1.55
n	10	10	10	10	10	10

Percent 1SW is calculated by year of smolt migration

Numbers in parentheses are released fish.

Table 21. Recreational catch of Atlantic salmon in Statistical Area N, Gulf Region, Newfoundland and Labrador, 1953-1987.

Year	Effort (rod-days)	1SW (< 63 cm)	MSW (> 63 cm)	Total catch	CUE	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	1,375	908	83	991	0.72	88
1964	1,794	1,449	137	1,586	0.88	87
1965	1,757	1,771	60	1,831	1.04	96
1966	1,985	1,977	72	2,049	1.03	96
1967	2,125	2,011	139	2,150	1.01	93
1968	2,215	2,223	110	2,333	1.05	95
1969	1,957	2,748	82	2,830	1.45	96
1970	3,094	2,913	105	3,018	0.98	96
1971	1,549	2,018	123	2,141	1.38	96
1972	1,502	1,332	34	1,366	0.91	98
1973	2,903	2,648	148	2,796	0.96	90
1974	3,210	1,789	15	1,804	0.56	99
1975	3,344	2,716	16	2,732	0.82	99
1976	3,533	3,014	34	3,048	0.86	99
1977	3,376	2,413	18	2,431	0.72	99
1978	2,687	1,350	13	1,363	0.51	99
1979	3,818	3,281	13	3,294	0.86	99
1980	3,380	1,651	32	1,683	0.50	99
1981	4,324	2,511	31	2,542	0.59	98
1982	4,324	2,156	54	2,210	0.51	99
1983	4,320	1,947	16	1,963	0.45	100
1984	4,633	1,753	3	1,756	0.38	100
1985	3,444	1,325	(2) ---	1,327	0.39	100
1986	3,855	1,631	(4) ---	1,635	0.42	100
1987	3,825	1,666	(6) ---	1,672	0.44	100
<u>1982-86</u>						
X	4,115.20	1,762.40	15.80	1,778.20	0.43	99.80
S.D.	466.87	315.31	22.10	333.6	0.05	0.45
n	5	5	5	5	5	5
<u>1977-86</u>						
X	3,816.10	2,001.80	18.60	2,020.40	0.53	99.20
S.D.	599.62	605.24	16.29	609.85	0.15	0.79
n	10	10	10	10	10	10

Percent 1SW is calculated by year of smolt migration

Numbers in parentheses are released fish.



**Table 22. Recreational catch of Atlantic salmon in Statistical Area A(01), Gulf Region, Newfoundland and Labrador, 1953-1987.**

Year	Effort (rod-days)	1SW (< 63 cm)	MSW (> 63 cm)	Total catch	CUE	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	1,687	38	0	38	0.02	100
1968	1,977	57	0	57	0.03	100
1969	2,192	21	0	21	0.01	100
1970	1,105	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	1,341	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	596	75	(0) ---	75	0.13	100
<u>1982-86</u>						
X̄	559.40	93.40	0.40	93.80	0.17	99.20
S.D.	182.27	39.43	0.89	39.93	0.06	1.79
n	5	5	5	5	5	5
<u>1977-86</u>						
X̄	672.80	105.00	1.00	106.00	0.17	98.60
S.D.	268.17	35.87	2.54	37.14	0.06	3.27
n	10	10	10	10	10	10

Percent 1SW is calculated by year of smolt migration

Numbers in parentheses are released fish.

**Table 23. Recreational catch of Atlantic salmon in Statistical Area 0(50), Gulf Region, Newfoundland and Labrador, 1953-1987.**

Year	Effort (rod-days)	1SW (< 63 cm)	MSW (> 63 cm)	Total catch	CUE	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	1,206	834	335	1,169	0.97	56
1965	1,596	801	391	1,192	0.75	68
1966	2,339	1,337	344	1,681	0.72	70
1967	1,901	1,121	394	1,515	0.80	77
1968	2,233	1,645	356	2,001	0.90	76
1969	2,027	1,265	273	1,538	0.76	86
1970	2,558	1,566	321	1,887	0.74	80
1971	2,259	927	247	1,174	0.52	86
1972	2,357	423	80	503	0.21	92
1973	3,043	1,431	432	1,863	0.61	49
1974	2,713	740	291	1,031	0.38	83
1975	2,180	1,069	154	1,223	0.56	83
1976	3,896	2,498	310	2,808	0.72	78
1977	3,918	1,662	593	2,255	0.58	81
1978	2,413	573	183	756	0.31	90
1979	2,149	901	119	1,020	0.47	83
1980	2,476	938	337	1,275	0.51	73
1981	3,353	1,698	220	1,918	0.57	81
1982	3,279	1,271	80	1,351	0.41	96
1983	3,529	2,000	130	2,130	0.60	91
1984	3,997	987	185	1,172	0.29	82
1985	3,664	1,092	(0) 100	1,192	0.33	91
1986	4,643	1,072	(0) 184	1,256	0.27	86
1987	4,993	1,887	(0) 223	2,110	0.42	83
<u>1982-86</u>						
X̄	3,822.40	1,284.20	135.80	1,420.00	0.38	88.60
S.D.	526.86	413.30	47.89	402.98	0.13	3.91
n	5	5	5	5	5	5
<u>1977-86</u>						
X̄	3,342.10	1,219.30	213.10	1,432.40	0.43	86.60
S.D.	791.09	438.13	152.22	496.12	0.13	6.75
n	10	10	10	10	10	10

Percent 1SW is calculated by year of smolt migration

Numbers in parentheses are released fish.

Table 24. Counts of Atlantic salmon from downstream and upstream traps of counting fences (Western Arm Brook, 1971-87; Hughes Brook, 1984-87) and fishways (Torrent River, 1971-87; Lomond River, 1971-87), Gulf Region, Newfoundland and Labrador. Number in parentheses indicates returns after transfers to Torrent River and fence mortalities subtracted.

Year	Salmon Fishing Area 14											Salmon Fishing Area 13							
	Statistical Area N					Statistical Area M						Statistical Area L							
	Western Arm Brook fence					Torrent River fishway						Hughes Brook fence							
	Downstream		Upstream			1SW			MSW			Total*			Downstream		Upstream		
	Smolts	Kelt	1SW	MSW	Total*	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	309(205)	9	214	64	3	67	30	15	45	---	---	---	---	---			
1973	8,484	95	555(351)	30	381	96	12	108	108	110	218	---	---	---	---	---			
1974	11,854	302	399(299)	4	303	38	3	41	41	33	74	---	---	---	---	---			
1975	9,600	203	631(393)	1	394	191	25	216	1	0	1	---	---	---	---	---			
1976	6,232	201	520(420)	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***			
<b>1982-86</b>																			
Mean	14,963.60	301.00	411.80	1.60	413.40	2,058.40	274.60	2,333.20	295.80	23.20	319.00	304.67	0	55.33	1.67	57.00			
S.D.	4,123.07	243.59	420.47	1.82	422.02	473.71	214.37	513.10	101.92	16.15	117.46	274.18	0	39.07	1.53	40.60			
n	5	5	5	5	5	5	5	5	5	5	5	3	3	3	3	3			
<b>1977-86</b>																			
Mean	13,578.30	311.00	514.00	1.60	515.60	1,692.90	162.60	1,855.60	239.40	20.90	260.30								
S.D.	3,700.31	280.99	469.68	1.51	469.85	663.88	186.45	756.76	103.92	16.64	110.90								
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.

**Table 25. Effort, 1SW and MSW recreational salmon catches and closure dates as a result of low water for Gulf Region Newfoundland and Labrador rivers in 1987. Number in parenthesis indicate released fish.**

RIVER		ROD-DAYS	1SW	MSW	Closure Dates
SFA 12					
Area J2	La Poile River	443	255	(18)	July 16-27
	Farmers Brook	196	57	0	July 16-27
	Garia River	210	133	(5)	July 16-27
	Northwest Brook	95	23	(1)	July 16-27
	Grandys Brook	535	193	(3)	July 16-27
	Isle Aux Morts River	470	97	0	July 16-27
	Grand Bay River	218	71	0	July 16-27
SFA 13					
Area K	Bear Cove Brook	187	23	0	July 16-27
	Little Codroy River	296	73	0	July 16-27
	Grand Codroy River	5546	1261	(181)	July 16-27
	Crabbes River	368	93	(4)	July 16-Aug 3
	Barachois Brook	208	51	0	July 16-Aug 3
	Robinsons River	1276	230	(15)	July 16-Aug 3
	Fischells Brook	266	59	(2)	July 16-Aug 3
	Flat Bay Brook	826	219	0	July 16-Aug 3
	Little Barachois Brook	148	43	0	July 16-Aug 3
	Southwest and Bottom Brook	1571	386	(6)	July 16-Aug 24
	Harrys River <sup>1</sup>	1633	378	(8)	July 16-Aug 2
Area L					
	Fox Island River	354	2	0	July 16-Aug 3
	Serpentine River	314	80	(13)	July 16-Aug 3
	Humber River <sup>2</sup>	7182	3011	(113)	July 16-Aug 24
	Cooks Brook	53	4	0	July 16-Aug 3
	Goose Arm River	533	13	0	no closures
SFA 14					
Area M	Trout River	85	1	0	no closures
	Lomond River	1186	294	(13)	July 13-Aug 30
	Parsons Pond River	242	9	0	no closures
	Portland Creek <sup>3</sup>	2770	617	(20)	July 17-Aug 30
	River of Ponds	4316	1522	0	no closures
	Little Brook Pond	591	117	0	no closures
	Torrent River	576	165	(2)	no closures
	Big East River	799	169	0	no closures

(Continued on next page)

Table 25 (Continued)

Area N	Castors River	1297	790	(2)	no closures
	St. Genevieve River	1739	676	(2)	no closures
	Western Arm Brook	269	69	(2)	July 22-Aug 30
	Eastern Arm Brook	56	16	0	no closures
	Big Brook <sup>4</sup>	209	63	0	July 16-Aug 30
	Watson's Brook	255	52	0	no closures
Area A (01)	Pensons Brook	61	8	0	no closures
	Bartletts River	124	27	0	no closures
	Upper Brook	194	24	0	no closures
	East River	217	16	0	no closures
Area O(50)	Forteau Brook	1368	537	29	no closures
	L'Anse-A-Loup River	851	202	1	no closures
	Pinware River	2774	1148	193	no closures

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- 1 Harrys River (Lower and Middle sections) and Harrys River (Home Pool section) were closed until Aug. 3.
- 2 Humber River closures apply to Little Falls, Big Falls, Adies stream, Harrimans steady, and Taylors brook. All other areas were not closed.
- 3 Portland Creek closure applies to Southwest feeder area only. All other areas were not closed.
- 4 Big Brook Lower section closed from July 27-Aug 30.

Table 26. Percentage of small, large, 1SW and MSW salmon caught in Gulf Region commercial and recreational fisheries by Area since 1985.

Area.	Commercial						Recreational					
	small			large			1SW			MSW		
	1985	1986	1987	1985	1986	1987	1985	1986	1987	1985	1986	1987
SFA 12 (J <sup>2</sup> )	-	-	-	-	-	-	10	7	6	7	3	4
Area K	30	29	29	46	30	20	26	27	21	59	43	34
Area L	16	29	16	18	13	5	22	25	23	3	26	20
SFA 13	46	58	45	64	43	25	48	51	45	62	69	54
Area M	21	8	22	11	9	14	20	23	22	6	10	6
Area N	19	17	11	6	12	5	12	11	13	0	0	1
Area O(50)	12	16	20	18	34	55	10	7	14	24	18	35
Area A(01)	3	2	2	0	2	1	1	1	1	0	0	0
SFA 14	54	42	55	36	57	75	42	42	49	31	28	42

**Table 27. Mark-recapture data used to estimate spawning escapement to Western Arm Brook in 1985 and 1986.**

Year	Date marking began	No. good released marked	No. poor releases marked	Total marked	No. through fence prior to marking	No. through fence after marking	No. marked fish through fence	Estimated returns after marking	Spawning escapement	Total returns
1985	July 16	32	21	53	12	150	12	383	395	416
1986	July 6	11	6	17	63	189	4	456	525	525

ZONES DE GESTION POUR  
TERRE-NEUVE ET LE LABRADOR

MANAGEMENT ZONES FOR  
NEWFOUNDLAND AND LABRADOR

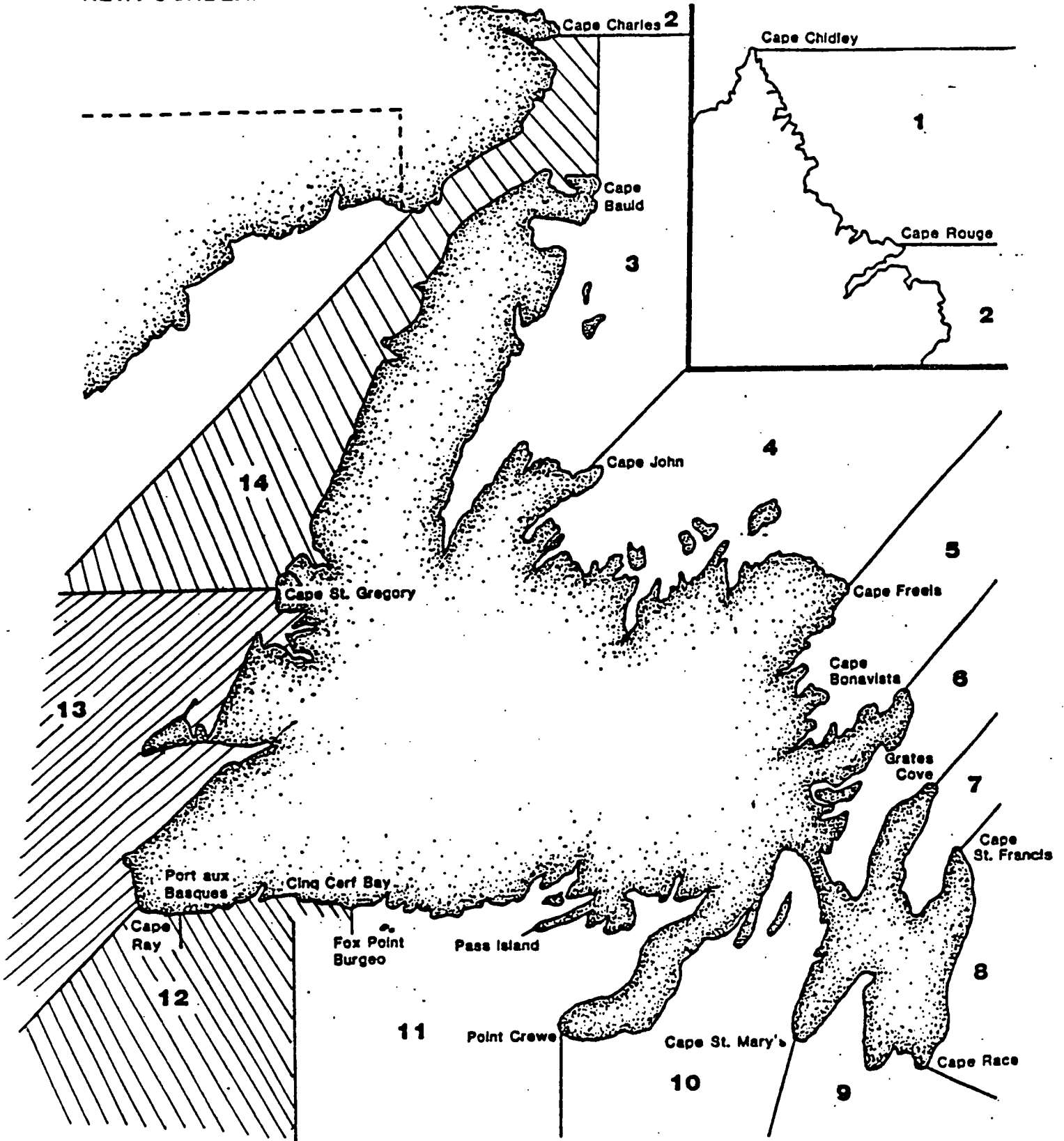


Fig 1 Boundaries of Salmon Fishing Areas 12, 13 and 14, Gulf Region, Newfoundland and Labrador.



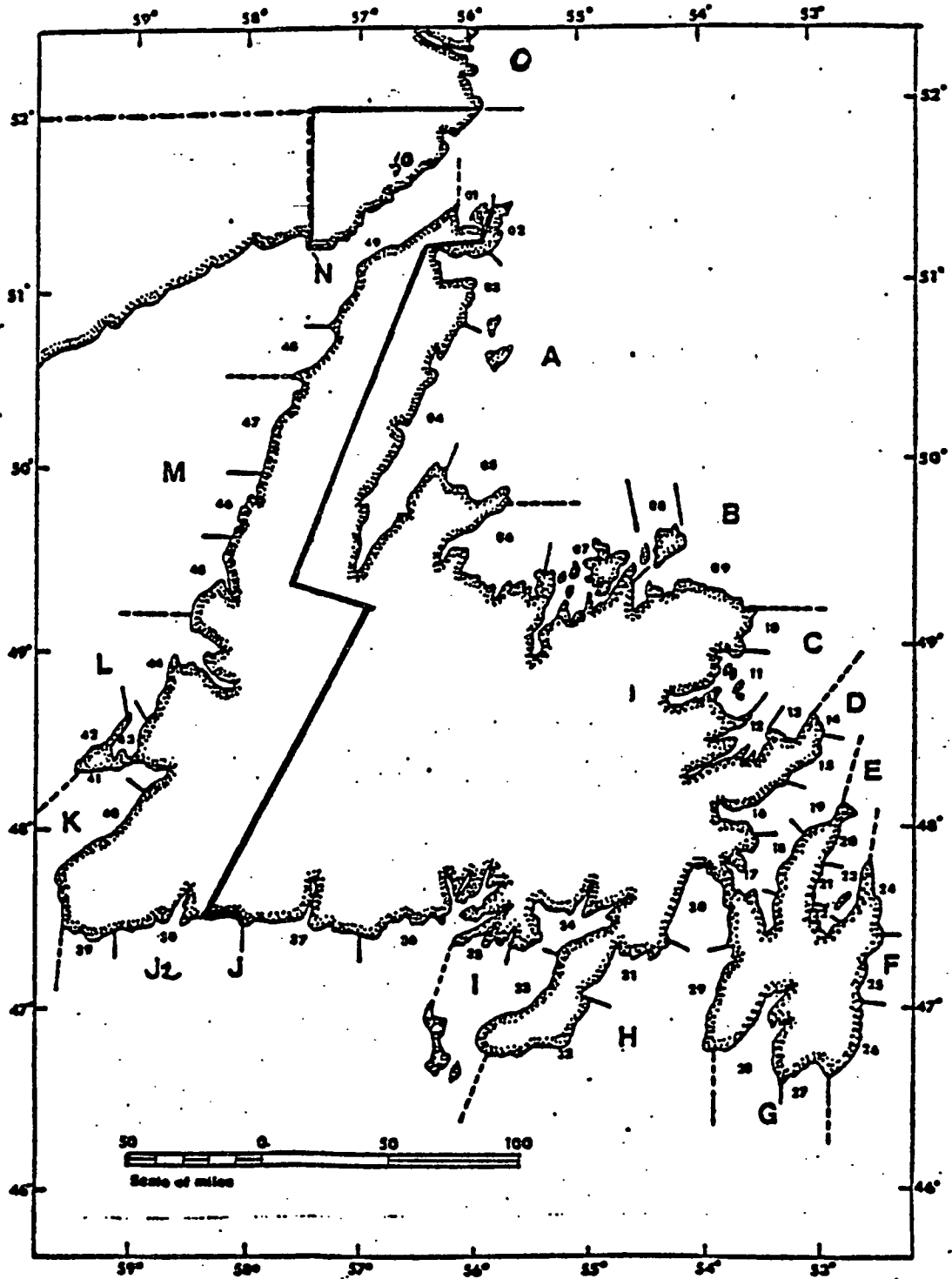


Fig 2 Boundaries of Statistical Areas J2, K, L, M, N, A(01) and O(50) (dotted lines) and Sections 38-50 and 01 (solid lines), Gulf Region, Newfoundland and Labrador.

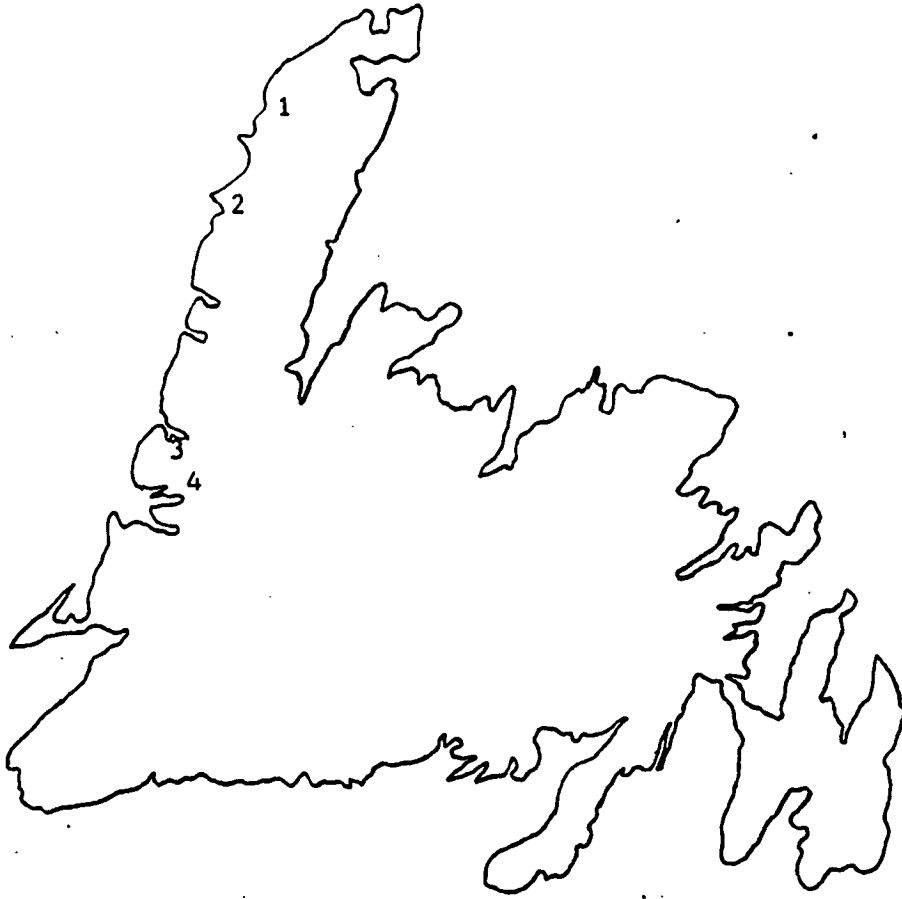


Fig 3. Location of major fishways and counting fences, Gulf Region, Western Newfoundland.

<u>Location</u>	<u>Facility</u>	<u>Coordinates (river)</u>
1. Western Arm Brook (St. Barbe Bay)	Counting Fence	51° 11' 25" N, 56° 45' 58" W
2. Torrent River (Hawkes Bay)	Fishway	50° 36' 47" N, 57° 10' 14" W
3. Lomond River (East Arm, Bonne Bay)	Fishway	49° 25' 50" N, 57° 44' 00" W
4. Hughes Brook (Humber Arm)	Counting Fence	48° 59' 15" N, 57° 54' 30" W

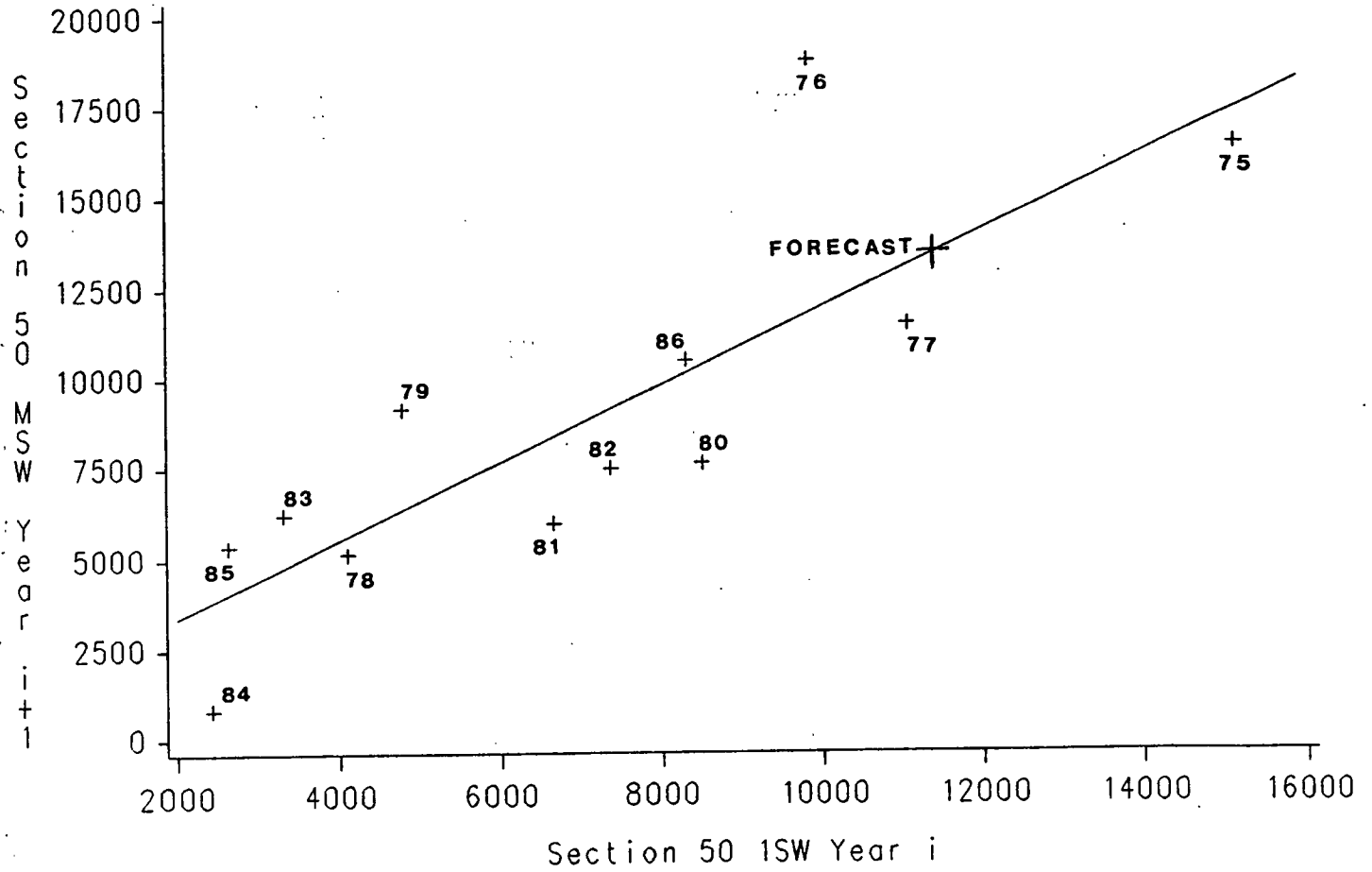


Fig 4 Forecast of 1988 MSW commercial salmon catch (year i + 1) in Area 0 (50) using 1SW catch (year i).  $MSW(\text{year } i + 1) = 1SW(\text{year } i) \times 1.064 + 1255$ ,  $R^2 = 0.67$ ,  $p = 0.0012$ . Year of 1SW catch is indicated.

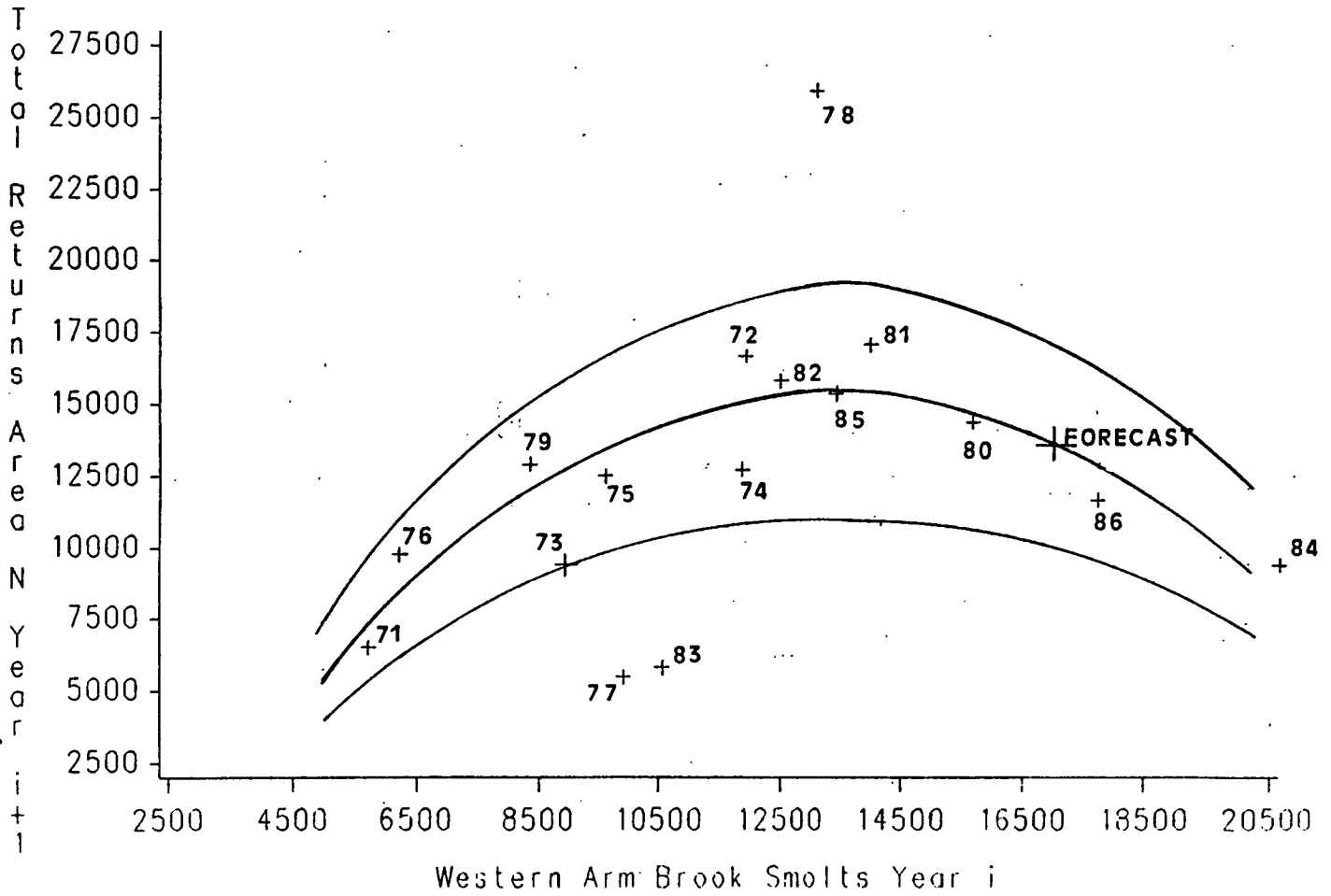


Fig 5 Forecast of 1988 total returns of 1SW salmon (year i + 1) to Area N using smolt counts at Western Arm Brook (year i). Years 1977, 1978 and 1983 have been excluded. Middle line represents formula curve, lines above and below are 30% above and below values predicted from curve.  $1SW\ salmon\ (year\ i + 1) = smolts\ (year\ i) \times 3.523 + (smolts)^2 \times (-0.00013) - 8926$ ,  $R^2 = 0.77$ ,  $p = 0.0006$ . Year of smolt migration is indicated.

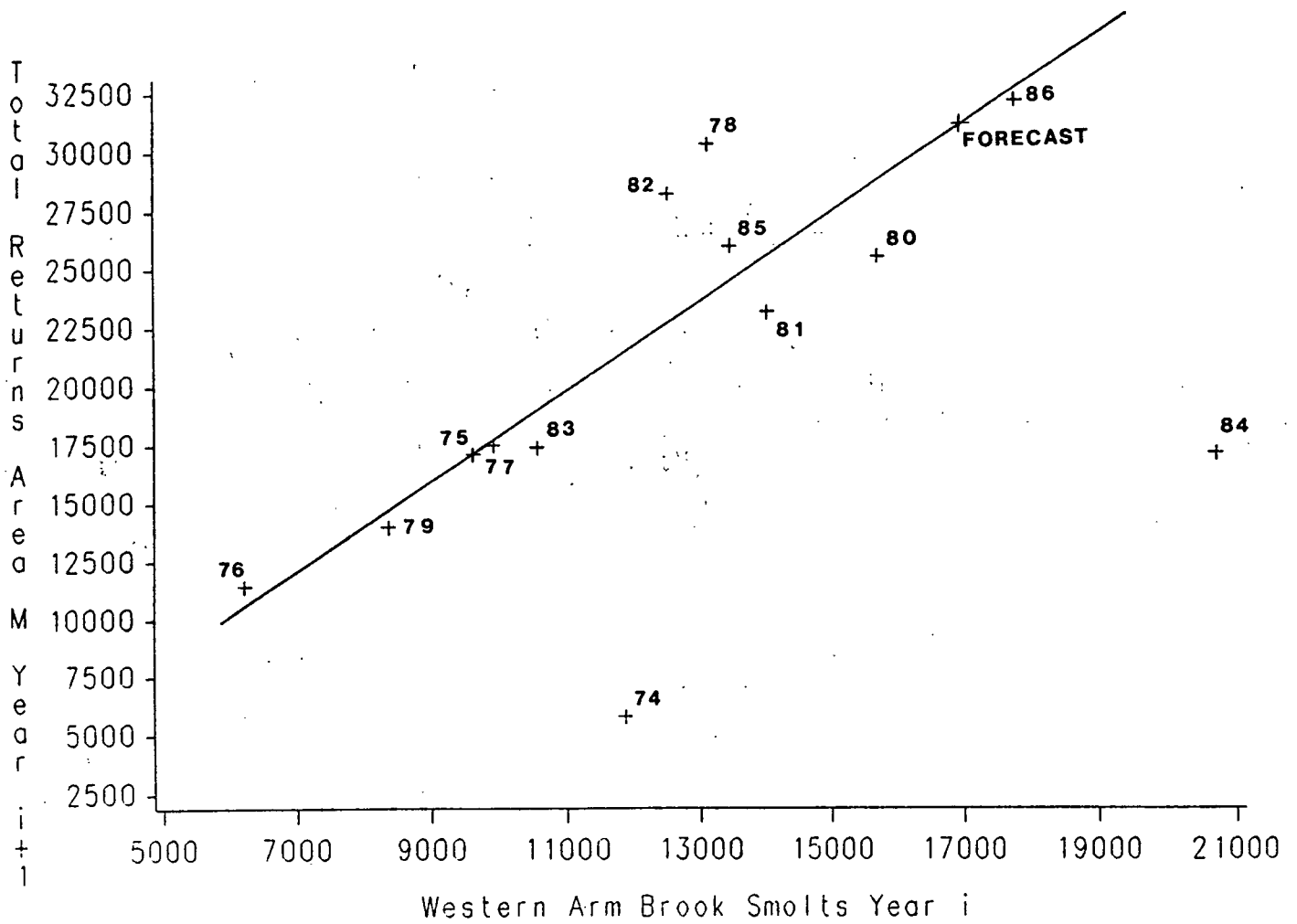


Fig 6 Forecast of 1988 total returns of 1SW salmon (year i + 1) to Area M using smolt counts at Western Arm Brook (year i). 1984 has been excluded.  $1SW \text{ salmon (year } i + 1) = \text{smolts (year } i) \times 1.87 - 1566$ ,  $R^2 = 0.54$ ,  $p = 0.0064$ . Year of smolt migration is indicated.