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Status of Atlantic Salmon Stocks in Statistical Areas K and L, Western Newfoundland, 1984.

by

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ABSTRACT

Despite more restrictive management actions in Statistical Areas J2, K and L in 1984, as applied to both commercial and recreational fisheries, increased harvests were recorded in these fisheries in 1984. With the exception of the recreational fishery in Area L, harvests in the commercial and other recreational fisheries were up over 1983 and mean harvests 1978-83. Increased catches in 1984, despite reduced effort, indicate a greater total return of salmon, except in Area L. Calculations of the potential spawning escapements to Areas K and L in 1984 indicate some strong improvements to rivers in Area L, from those indicated for 1982 and 1983. Target spawning escapements were likely met on many rivers in Area K, but are still not being met on the rivers in Area L.

RE SUME

En dépit des mesures administratives de restriction appliquées dans les zones statistiques J2, K et L, en 1984, à la pêche tant commerciale que récréative, le nombre de captures en 1984 a augmenté. Les prises tant commerciales que récréatives, sauf les prises récréatives dans la Zone L, ont dépassé celles de 1983 et les moyennes de 1978 à 1983. L'augmentation des prises en 1984, en dépit de l'effort réduit, indique une plus grande nombre de saumon retournant, sauf pour la Zone L. Le calcul des échappements potentiels pour la reproduction vers les Zones K et L en 1984, indique une amélioration marquée dans la plupart des rivières de la Zone K, mais des échappements identiques ou plus faibles dans la Zone L par rapport à ceux de 1982 et 1983. Les nombres cibles d'échappements pour la reproduction ont été probablement atteints dans la plupart des rivières de la Zone K, mais ne le sont pas encore dans les rivières de la Zone L.

INTRODUCTION

The purpose of this paper is to evaluate, with previous years catch and effort statistics from the commercial and recreational fisheries, Atlantic salmon stocks in Fisheries Statistical Areas K and L of Western Newfoundland (Figure 1) in 1984; and evaluate the status of stocks in light of management strategies implemented.

Management actions affecting effort and harvest in the fisheries in Areas K and L in 1984 included:

- a small reduction in the commercial salmon fishing season for Areas K and L (season was open 5 June - 10 July, as opposed to 1 June - 10 July, 1978-83);
- a complete closure of the commercial salmon fishery in Area J₂ (previously open 20 May - 10 July, 1978-83);
- restricting the recreational fisheries for salmon to the retention of grilse (salmon < 63 cm) only, though the legislation prohibiting anglers from landing salmon > 63 cm was not gazetted and officially law until late in the season (August 8);
- angling seasons on the Grand Codroy River and Robinsons River were shortened to those previously allowed 1978-82, i.e., 20 June - 31 August, as opposed to 10 June -31 August, allowed in 1983;
- an attempt was made to decrease the harvest on Serpentine River (closed to trout angling only).

Details of season changes in the commercial and recreational fisheries are presented (Tables 1 and 2).

The impact of the 1984 management action on Areas K and L was assessed by comparing potential spawning escapements in 1984 to target spawning requirements and by examining trends in commercial and recreational fisheries.

METHODS

Values for commercial landings (by weight) of Atlantic salmon in Areas K and L for the 1984 season were obtained from Economic Services Branch, Moncton. Numbers of fish landed were calculated using mean weights from the statistics recorded 1978-83, for 1SW and MSW salmon, respectively. The 1984 data were updated with the historical landings for these areas as presented by Peppar (1984).

Harvests of Atlantic salmon in the recreational fisheries are recorded by field personnel of the Protection and Regulations Branch. Salmon angling reports are completed in the field on a weekly basis and then submitted to Economic Services Branch, Corner Brook, who in turn, provide copies of each report to our Branch. The 1984 harvests were compiled and verified and values forwarded at the end of the season to DFO, St. John's (Research Branch) for subsequent key-punching and inclusion with the other harvest statistics for the Province. The 1984 catches have been added to the tables of historical catches as part of the "stream catalogue" prepared by Research Branch, St. John's (Peppar 1984).

Target spawning escapements for the river systems were provided by Porter and Chadwick (1983). These requirements were calculated using an egg deposition of 240 eggs/100 m² of parr rearing area and an estimate of the number of eggs deposited per spawner (Table 3).

To derive potential spawning escapements to the rivers of Areas K and L in 1984, the following assumptions were applied: harvests in the recreational fisheries in 1984 (with the large salmon harvests adjusted) were proportional to spawning escapements, and additional spawners would be available to the rivers in 1984 because of reduced commercial fishing seasons (in Areas J₂, K and L) and changes in the angling fishery regulations (pertaining to large salmon). In 1984, additional spawners to Areas K and L were assumed available from commercial fishing season reductions in Areas K and L, and the closure of the fishing in Area J₂. These are additional spawners to those already identified from the commercial fishing season changes over the period 1978-82. Additional spawners to Areas K and L from the recreational fisheries in K and L were calculated assuming all large salmon caught after August 8 were released.

In Areas K and L, an estimate of the additional fish released from the reduced commercial season was determined by calculating the average weekly commercial harvests for the period 1980-83 (catch statistics from Moores et al. 1984; E. Ash, personal communication) and adjusting the seasons to reflect the average catch for the period 1 June to 4 June (i.e., the difference between harvests in reduced and full seasons) (Table 4). The same procedure was applied to Area J_2 , except that the additional fish released were calculated for the period 20 May to 4 June. These additional fish were considered not to have been affected by any fishery and, thus, were apportioned (along with those identified earlier, i.e., over the period 1978-82) to the river spawning escapements in Areas K and L based on the mean recreational harvest percentages (Porter and Chadwick 1983) (Table 5). Interception of mainland stocks in Area J2 was assumed to be 65%.

In Areas K and L, an estimate of the additional fish released from the angling regulation change (release of large salmon) was determined by adjusting the 1984 angling harvests to reflect the large salmon released after August 8. It was assumed that catches of large salmon, had large salmon been retained over the entire season, would have approximated the mean catches 1978-82. For each river, the angling catch of large salmon, if less than the mean recorded 1978-82, was adjusted up to the mean catch. The differences in catches (recorded and mean) were assumed to reflect the additional fish released to the spawning escapements as a result of the regulation change in 1984 (Table 6).

The adjusted 1984 angling harvests were used to derive the river escapements, using angling exploitation rates of 20% and 40%, as known rates were not available for stocks in Areas K and L; these values are considered the minimum and maximum observed values for rivers in insular Newfoundland. (Chadwick 1982).

RESULTS

HARVEST STATISTICS

Area K

Total commercial landings of Atlantic salmon in 1984 were 25t, up 25% over the amount landed in 1983 (20t), and equal to the mean 1978-83 (25t) (Table 7). Based on the calculated mean weights of 1.80 kg and 4.52 kg for 1SW and MSW salmon, respectively, the landings for 1984 were composed of 7,727 grilse and 2,367 large salmon (Table 7). Numbers of grilse in the landings were up 25% over 1983 (6,178), but down 13% from those in the mean landings 1978-83 (8,884). Numbers of large salmon in the landings in 1984 were up 13% over 1983 (2,094) and up 21% over those in the mean landings 1978-83 (1,953).

Total recreational catch and effort in 1984 were 5,109 fish and 14,783 rod days (CPUE 0.35), up 41% over the catch recorded in 1983 (3,629) and down 10% from the total effort recorded in 1983 (16,480). The 1984 CPUE was up 59% over 1983 (0.22) (Table 8).

Compared to the mean recreational catch 1978-83 (4,171), the 1984 catch was up 23%; mean effort 1978-83 (12,893), the 1984 effort was up 15%; and mean CPUE 1978-83 (0.33), the 1984 CPUE was up 6%.

The 1984 recreational catch was comprised of 4,847 grilse and 262 large salmon. This grilse catch was up 58% over that recorded in 1983 (3,075) and 31% over the mean in the period 1978-83 (3,691). Large salmon catch was down 53% from that recorded in 1983 (554) and 45% from the mean of 1978-83 (480).

Area L

Total commercial landings of Atlantic salmon in 1984 were 18t, up 39% over the amount landed in 1983 (13t), and up 29% over the mean 1978-83 (14t) (Table 9). Based on the calculated mean weights of 1.90 kg and 4.72 kg for 1SW and MSW salmon, respectively, the landings for 1984 were composed of 6,609 grilse and 1,177 large salmon (Table 9). Numbers of grilse in the landings were up 41% over 1983 (4,701) and up 32% over those in the mean landings 1978-83 (5,009). Numbers of large salmon in the landings were up 43% over 1983 (821) and up 33% over those in the mean landings 1978-83 (882).

Total recreational catch and effort in 1984 were 2,971 fish and 7,369 rod days (CPUE 0.40), down 11% from the catch recorded in 1983 (3,318) and down 18% from the total effort recorded in 1983 (8,993). The 1984 CPUE was up 8% over that recorded in 1983 (0.37) (Table 10).

Compared to the mean recreational catch 1978-83 (3,871), the 1984 catch was down 23%; mean effort 1978-83 (9,097), the 1984 effort was down 19%; and mean CPUE 1978-83 (0.33), the 1984 CPUE was down 5%.

The 1984 recreational catch was comprised of 2,924 grilse and 47 large salmon. This grilse catch was down 10% and 21% from that recorded in 1983 (3,262) and the mean 1978-83 (3,712), respectively. Large salmon catch was down 16% and 70% from that recorded in 1983 (56) and the mean 1978-83 (159), respectively.

SPAWNING ESCAPEMENTS

Area K

Both maximum and minimum estimates of spawning escapement for Area K in 1984 indicate surpluses of 20,023 fish and 6,678 fish, respectively, over the target number of 25,059 spawners (Table 11). Increased escapements in 1984 were indicated for all rivers in Area K over those calculated for 1982 (Porter and Chadwick 1983) and 1983 (Peppar 1984).

Greatly improved escapements were indicated for the Grand Codroy and Robinsons rivers, both of which had angling seasons as those previously allowed 1978-82, i.e., the season extensions of 1983 rolled back. Highly improved escapements were also indicated for Crabbes and Little Barachois brooks, both of which had indicated deficit minimum estimates of spawning escapements in 1983. Fischells Brook, Flat Bay Brook and Harry's River continued to indicate deficit spawning escapements; however, the magnitudes of these deficits were reduced from those indicated in 1982 and 1983.

<u>Area L</u>

Both maximum and minimum estimates of spawning escapements for Area L in 1984 indicate deficits of 7,121 fish and 14,886 fish, respectively, from the target number of 24,682 spawners (Table 11). Decreased (or similar) escapements in 1984 were indicated for all rivers in Area L from those calculated for 1982 (Porter and Chadwick 1983) and 1983 (Peppar 1984).

The deficits indicated for Fox Island and Serpentive rivers were in the same magnitude as indicated in 1982 and 1983. However, the deficits indicated for the Humber River have increased over those indicated for the past two years.

DISCUSSION

Despite more restrictive management actions in Statistical Areas J₂, K and L of insular Newfoundland in 1984, as applied to both commercial and recreational fisheries, increased harvests were recorded in these fisheries in 1984. With the exception of the recreational fishery in Area L, harvests in the commercial and other recreational fisheries were up over 1983 and mean harvests 1978-83. Increased catches in 1984, despite reduced effort, indicate a greater total return of salmon, except in Area L.

In Area K, grilse landings in the commercial fishery were up over 1983, but down from the mean landings 1978-83. Large salmon landings in the commercial fishery of Area K were up over 1983 and mean landings 1978-83. In Area L, grilse and large salmon landings in the commercial fishery were up over 1983 and the mean landings 1978-83.

In the recreational fishery of Area K, grilse harvests were up over 1983 and up, as well, over mean harvests 1978-83. In Area L, grilse harvests were down from 1983 and the mean harvests 1978-83. Large salmon harvests in the recreational fisheries were down in both Areas, as was to be expected from the angling regulations change imposed later in the season.

Calculations of the potential spawning escapements to Areas K and L in 1984 indicate some strong improvements to most rivers in Area K, but the same or poorer escapements to rivers in Area L from those indicated for 1982 and 1983. Target spawning escapements were likely met on many rivers in Area K but are still not being met on the rivers in Area L. The latter rivers still require substantial increases in spawners to meet these requirements.

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	01d (Before	l 1978)	New (1978-1982)	1983	1984
Connercial					
Area J ₂ Area K	15 May3 15 May3	1 Dec.	20 May-10 July 1 June-10 July	20 May-10 July 1 June-10 July	Closed 5 June-10 July
Area L	15 May-3	1 Dec.	1 June-10 July	1 June-10 July	5 June-10 July
Recreational.					
Lt. Codroy	24 May-1	5 Sept.	1 July-15 Aug.	1 July-15 Aug.	1 July-15 Aug.
Gd. Codroy	11	11	20 June-31 Aug.	.10 June-31 Aug.	.20 June-31 Aug.
Highlands	11	11	No Season	Closed	Closed
Crabbes	11	11	20 June-31 Aug.	18 June-31 Aug.	20 June-31 Aug.
Barachois	11	11	20 June-31 Aug.	18 June-31 Aug.	• • • • • • • •
Rabinsons	11	11	20 June-31 Aug.	10 June-31 Aug.	TØ 11
Fischells	11	Ħ	20 June-31 Aug.	18 June-31 Aug.	+1 11 • •
Flat Bay	If	11	#20 June-20 July	18 June-31 Aug.	38 88
Lt. Barachois	11	11	1 July-15 Aug.	1 July-15 Aug.	1 July-15 Aug.
Southwest	58	11	*20 June-31 July	18 June-31 Aug.	20 June-31 Aug.
Harry's	11	11	1 July-15 Aug.	1 July-15 Aug.	1 July-15 Aug.
Fox Island	11	11	**4 July-17 July	1 July-16 July	1 July-15 July
Serpentine	11	11	1 July-31 Aug.	1 July-31 Aug.	*Closed*
Cooks	17	Ħ	No Season	Closed	Closed
Hunber	11	11	##20 June-31 Aug.	##10 June-31 Aug.	10 June-31 Aug.
Hughes	93	11	No Season	Closed	Closed

Table 1. Summary of season changes in commercial and recreational fisheries of Areas K and L.

20 June-20 July 1976-80; 20 June-31 Aug. 1981-82.

* 15 June-31 Aug. in 1979.

** No Season 1976-80.

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- # 10 June-31 Aug. 1981-82 for Upper Humber; 20 June-7 Sept. 1980 for Lower Humber; Closed July 7-18, 1983.
- . Closed July 7-12, 1983; 26 June-1 July and Aug. 11-20, 1984. .. Closed Aug. 8-20, 1983.

Closed = Non-enforceable closure; River "Closed" to angling for salmon only, trout angling allowed.

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River name	Section closed
Grand Codroy River to South Branch	Trans Canada Highway to source
Crabbes River	Twelve mile pool to source
Barachois Brook	Mine pool (Mile 14) to source
Robinsons River	Chatter pool (Mile 16) to 25 yds. above falls at Mile 19
Fischells Brook	Big Steady (Mile 10) to 25 yds. above falls at Mile 18
Little Barachois Brook	Old Logger's School (Mile 19) to source
Southwest Brook (St. George's Bay)	Mouth of John's Brook to source
Harry's River	Mouth of Harry's River to below Sandbank Pool
Spruce Brook	Mouth of Spruce Brook to source
Pinch Out Lake	All tributaries of Pinch Gut Lake
Serpentine River	All tributaries of Serpentine Lake including Serpentine River upstream from Serpentine Lake
Hunber River	From a line drawn from Lundrigan's Wharf to Wild Cove Point upstream to Ballams Bridge
Adies Lake	All tributaries of Adies Lake
Portland Creek (Southwest Feeder)	From falls upstream from Fisheries Cabin to source
Little Brook Ponds (Northern Peninsula)	Mouth to first pond
West River (St. Barbe)	Counting fence to 25 yds. above falls
Exploits River (Great Rattling Brook)	From fishway at Mile 3.0 to source
Bellevue River	Cabot Highway to Trans Canada Highway
Northwest River (Trepassey)	Five yds. below the falls called Ladder Falls to 25 yds. above
Branch River (St. Mary's Bay)	The Flats (beginning inside the gut and extending upstream $\frac{1}{2}$ mile)

	Tab	le	2.	A	SUMMERY	of	sections	closed	to	fishing	in	rivers	of	Newfoundl	and
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Table 3. Summary of rearing areas and biological characteristics used to calculate spawning requirements for rivers in Areas K and L. Optimal egg deposition was assumed to be 240 eggs per rearing unit (100 m²). Fecundity was assumed to be 1,540 eggs per kg. (Porter and Chadwick 1983).

	Rearing area	Gri	lse	Mean weight	Large	salmon	Mean weight	Required
	(100 m)	% grilse	% female	(kg)	% salmon	% female	(kg)	spawners
It. Codrov	3,890	66	14	1.6	34	67	5.1	463
St. Controv	25,963	86	57	1.4	14		+	3,511
Highlands	4,980	66	14*	1.4	34	67*	5.1*	601
Crabbes	18,429	76	40	1.4	24	+	+	2.345
Barachois	8,395	86	45	1.3	14	+	+	1,350
Rabinsons	13.491	87	63	1.4	13	+	+	1,752
Fischells	13,661	84	46+	1.2	16	+	+	2,137
Flat Bay	16,012	92	46+	1.4	8	+	+	2,904
Lt. Barachois	7,104	88	86	1.4	12	+	+	759
Southwest	18,970	82	43	1.3	18	+	+	2,795
Harry's	26,394	93	50	1.3	7	+	+	4,911
Other	10,016							1,530
Area K	167.305	86	46	1.4	14	90	3.7	25,059
Fox Island	6,558	58	46+	1.4+	42	+	+	577
Serventine	17,799	85	22	1.9	15	+	+	2.233
Cooks	1.474	100	46+	1.4+	0	+	+	357
Hunber	115,307	97	53	1.7	3	+	+	18,452
Hughes	1,221	91	46+	1.4+	9	+	+	215
Other	13.241							2.848
Area L	155,600	97	46+	1.4+	3	90	3.7	24,682

* Values from Lt. Codroy were used.

+ Mean values from Area K.

Adjusted	Adjust Cat	ed Mean	Adjuster Ceta	d Mean	Adjusted Mean Catch L			
season	15W	MSW	15W	M5W	15W	MSW		
15–21 May	6	435						
2228	44	2,446						
29-04 June	139	3,636	199	331	56	77		
05-11	337	4,499	848	466	161	314		
12–18	964	2,765	1,169	416	610	780		
19-25	1,171	997	1,895	360	1,285	247		
26-02 July	708	226	2,837	240	1,717	493		
03-09	439	74	1,577	121	1,096	82		
10-16	82	15	411	58	304	70		
17-23			118	108	75	23		
24-30			178	69	26	26		
31-06			48	18	10	6		

Table 4. Adjusted mean commercial catches in Areas J₂, K and L to determine additional fish released to Areas K and L from Areas J₂, K and L due to further reductions (from 1978-82) in the commercial fishing seasons in 1984; catches adjusted to mean weekly catches 1980-83.

			Additional	fish rele	ased to Areas	KandL
River	Angling catch	as % of area	From	Fram		
	15W	MSW	connercial	angling	Additional*	Total
Little Codroy	1	4	233	10	488	731
Grand Codroy	19	19	1.144	0	2,964	4,108
Crabbes	5	12	704	70	1,642	2,416
Barachois	9	9	542	26	1,829	2,397
Robinsons	11	8	490	52	1,546	2,088
Fischells	5	5	302	10	ُ93 7	1,249
Flat Bay	9	6	369	16	1,329	1.714
Little Barachois	5	4	244	5	588	837
Southwest + Botton	15	21	1,249	15	3,473	4,737
Harry's	20	9	572	25	2,856	3,453
Others**	1	3				,
Area K			5,849	229	17,652	23,730
Fox Island	1	7	84	4	118	206
Serpentine	. 2	11	133	18	271	422
Hunber	95	79	1,092	113	3,034	4,239
Others**	2	3			·	,
Area L			1,309	135	3,423	4,867

Table	5.	Estimates	of	fish	release	j to	rivers	in Areas	K and L	from	recreational	fisheries	in
K and	La	nd connercia	al i	fishe	ries in (J ₂ ,	K and L	•					

* From Porter and Chadwick (1983). ** Includes rivers closed in 1984.

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River	1984 re angling 1SW	corded catch MSW	1984 Total	Mean ar <u>catch 1</u> 1SW	ngling 1978-82 MSW	Mean total catch	1984 ac angling 1SW	ljusted <u>1 catch</u> MSW	1984 Adjusted Total Catch
Little Codrov	78	·	82	55	1/1	70	78	1/1	 07
Crand Codray	1 696	4 179	1 845	997	152	70 1 1/i∩	1 686	170	1 845
Crahbee	39/1	1/	/:00	336	8/1	/120	39/1	8/1	/178
Berechnie	158	1 4	158	162	26	189	158	26	18/1
Rohineone	502	23	525	636	20 75	711	502	75	577
Fighells	214	8	222	215	18	233	214	18	232
Flat Bay	325	7	332	308	23	331	325	23	348
Little Berachois	101	2	103	123	7	129	101	7	108
Southwest + Bottom	633	14	647	456	29	485	633	29	662
Harry's	720	11	731	522	36	558	720	36	756
Area K *	4,847	262	5,109	3,814	465	4,278	4,847	491	5,338
Fox Island	18	· 1	19	53	5	58	18	5	23
Serpentine	34	6	40	165	24	189	34	24	58
Hunber	2,872	40	2,912	3,599	153	3,752	2,872	153	3,025
Area L *	2,924	47	2,971	3,802	179	3,981	2,924	182	3,106

Table 6. Recorded and adjusted recreational catches for Areas K and L in 1984; 1984 adjusted catch = 1984 recorded 15W catch plus 1984 recorded MSW catch adjusted (increased) to mean catch 1978-82.

*Area totals may include data from a few other rivers; these rivers have been closed to angling since 1978.

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<u> </u>		2 <u></u>		ST	ATISTICAL	AREA: K				
Year	Effort gear units	<u>Gi</u> weight	rilse t number	<u>Sa</u> weight	lmon number	Tweight	otal number	Cue	% Grilse (W)	% Grilse (N)
1969	218	22	11,990	13	2,709	35	14.699	0.16	62.86	81.57
1970	226	11	5.865	49	9,738	60	15,603	0.27	18, 33	37, 59
1971	337	7	3,756	21	4,185	28	7.941	0.08	25.00	47.30
1972	260	15	8,202	18	3.615	33	11,817	0.13	45.45	69.41
1973	369	33	18,137	12	2.366	45	20,503	0.12	73.33	88.46
1974	389	17	9.934	15	3,263	32	13,197	0.08	53.13	75.27
1975	614	12	6,529	7	1,400	19	7,929	0.03	63.16	82.34
1976	509	21	10,474	16	3,680	37	14,154	0.07	56.76	74,00
1977	467	15	8,530	26	5,534	41	14,064	0.09	36,59	60.65
1978	456	10	6,495	13	2,894	23	9,389	0.05	43.48	69.18
1979	455	19	10,242	4	868	23	11,110	0.05	82.61	92.19
1980	426	24	11,387	16	3,439	40	14,826	0.09	60.00	76.80
1981	403	19	11,097	7	1,573	26	12,670	0.06	73.08	87.58
1982	364	13	7,902	4	851	17	8,753	0,04	76.47	90.28
1983	418	11	6,178	9	2.094	20	8,272	0.05	55,00	74.69
1984*		14	7,727	11	2,367	25	10,094	-	56.00	76.55
Means	and Stan	dard Dev	viations:							
1707-0										
Mean S.D. N	394.07 106.29 15	16.60 6.66 15	9,114.53 3,450.12 15	15 .3 3 11.17 15	3,213.93 2,215.54 15	31.93 11.60 15	12,328.47 3,534.01 15	0.09 0.06 15	55.02 18.62 15	73.82 15.55 15
<u>1978-8</u>	B:									
M	400 77	44 m	0 007 50	0.07	4 057 47	04 07	40.074 (7	0.01	15 44	04
mean	421.35	16.00	8,883.50	8.85	1,000,00	24.85	10,856.67	0.06	65.11	81.19
5.0.	24.60	5.51	2,525.82	4.88	1,062.98	8.04	2,544.23	0.02	14.80	9.4/
N	0	6	6	6	6	6	6	6	6	6

Tab	le 7	•	Conner	rial	landings	of	Atlantic	salmon	and	licenced	fishing	gear	in	Statistical	Area
К,	1969	to	1984.	Wei	ght in me	tri	c tames.				-	-			

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* Numbers of grilse and large salmon calculated from mean weights (1978-83) of 1.80 kg and 4.52 kg respectively.

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<u></u>		STAT	ISTICAL AREA: K			
	Effort	Grilse	Salmon	Total		
Year	rod days	< 2 . 7 kg	> 2.7 kg	catch	Cue	Grilse
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	0.45	70
1968	15,114	5 615	987	6 602		85
1969	16 025	6 987	1 082	8 049	0.50	8/1
1970	19,612	6 153	1 0/19	7 202	0.50	97
1971	18 103	5 339	660	5,000	0.33	90 90
1972	15,803	4 218	871	5,099	0.32	94
1973	19,005	4,210	1 020	7 /150	0,72	00 91
197/1	19 9/16	4 322	7/1/1	5 044	0.27	901 901
1975	21 678	4, <i>J22</i> 5 771	744	6 527	0,27	20
1976	21,070	5 121	55/1	5,675	0.20	02 91
1077	17 200	<i>J</i> , 121	99/i	5 7/0	0.21	21
1070	11 09/	+,JJJ 1 7 77	507	2,242		04
1070	7 751	2,527)77 0/i	2,724	0.20	00
1000	19 316	4 213	6773	2,020 / 992	0,74	77 0
1001	14 311	4,212	500	4,000 5 /11	0.40	77 00
1002	14,211	4,711 5 045	200	29411 5 514	0.30	07
1007	12,417	3,045	407	2,214 3,220	0.20	21
1702	10,400	2,U/2	2/2	5,027	0.75	7U 00
	14,702	4,047	202	5,105	U, JJ	92
Means Sta	ndard Deviations	N's:				
69-73	17,712.0	5,825.4	936.3	6,761.8	0.38	86
S.D.	1,728.9	1,077.3	174.3	1,199.6	0.03	2
Ν	5	5	5	5	5	5
74–78	17,976.2	4,379.2	729.0	5,108.2	0.28	88
S.D.	4,232.7	1,294.5	172.6	1,338.4	0.01	1
N	5	5	5	5	5	5
79-83	13,255.0	3,963.2	456.0	4,419.2	0.33	89
S.D.	3,441.1	1,101.7	222.0	1,238.3	0.04	2
N	5	5	5	5	5	5
69-83	16,314.4	4,722.6	707.1	5,429.7	0.33	87
S.D.	2,792.5	1,356.3	269.7	1,548.0	0.02	1
N	15	15	15	15	15	15

Table 8. Sports harvest of Atlantic salmon in Area K, 1953-1984.

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Percent grilse is calculated by year class;

In the above table a period indicates no data for that year.

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				ST/	ATISTICAL A	NREA: L				
Year	Effort gear units	<u>Gr</u> weight	ilse number	Sal weight	lmon number	To weight	ital number	Cue	% Grilse (W)	% Grilse (N)
10/0	224	a	4 944	c	0/15	1/1	5 000	0.04	64.20	97.05
1707	153	7	4,744 7 002	ン マ	74) 676	14 12	2,007 7 200	0.40	04.27	02.72
1770	122 260	2	1 250) 1	0/0 112	10	1 375	0.10	61.0	01 54
1271	240	10	5 272	ו ג	572	13	5.90%	0.01	74 07	01.20
1073	20	0	1,275	ן ז	540	12	5 / 35	0.00	75.00	20.02 20.70
197/	198	8	4,075	3	55/	12	1,491	0.04	72.73	88 19
1975	366	6	2,882	3	694	9	3,576	0.02	66.67	80.59
1976	327	6	2,902	2	397	Ŕ	3 306	0.02	75.00	87.99
1977	270	5	2 377	7	1.421	12	3,798	n n <u>u</u>	41.67	62.59
1978	264	6	3,557	4	891	10	4,448	0.04	60.00	79.97
1979	250	8	3.987	1	288	.0	4.275	0.04	88.89	93.26
1980	255	16	8,113	9	1.818	25	9,931	0.10	64.00	81.69
1981	253	8	4.230	3	687	11	4.917	0.04	72.73	86.03
1982	214	10	5.467	4	789	14	6.255	0.07	71.43	87.40
1983	259	9	4.701	4	821	13	5.522	0.05	69.23	85.13
1984*	-	13	6,609	5	1,177	18	7,786	-	72.22	84.88
Means 1969-8	and Stan	dard Dev	iations:							
Mean	254.20	8.33	4,382.13	3.67	745.93	12.00	5,128.00	0.05	69.77	85,34
S.D.	49.91	3.33	1,745.05	2.09	425.08	4.75	1,986.33	0.03	10.66	7.51
N	15	15	15	15	15	15	15	15	15	15
1978-8	<u>13:</u>									
Mean	249.17	9.50	5,009.17	4.17	882.33	13.67	5,891.33	0.06	71.05	85.58
S.D.	17.90	3.45	1,655.24	2.64	505.85	5.85	2,108.68	0.02	9,96	4.68
N	6	6	6	6	6	6	6	6	6	6

Table 9. Commercial landings of Atlantic salmon and licenced fishing gear in Statistical Area L, 1969 to 1984. Weight in metric tornes.

* Numbers of grilse and large salmon calculated from mean weights (1978-83) of 1.90 kg and 4.72 kg respectively.

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STATISTICAL AREA: L										
Year	Effort rod days	Grilse < 2.7 kg	Salmon > 2.7 kg	Total catch	Cue	% Grilse				
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	D.62	87				
1965	8,193	4.388	385	4,773	0.58	93				
1966	9,997	4,000	433	4,861	0.70	91				
1967	6 685	2 501	267	2 768	0.42	9/1				
1968	7 207	2,750	167	2,700	0.41	9/1				
1969	12,805	5,160	5/12	5 702	0.40	8/1				
1970	1/1 8/18	3 586	59/1	/ 190	0.42	90 90				
1971	10,925	4 183	385	4,100	0.42	90				
1972	11,811	4 183	232	4,00	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	0.40	94				
1976	11 958	5 262	72	5 33/1	D //5	99				
1977	7 265	2,357	55	2 /12	0.42	99				
1979	8 402	2,007	259	3 220	0.37					
1070	8,632	3 /37	20	3 /66	0./0	20				
1990	2,007	3,700	320	2,400 // 1121	0.40	91				
1001	9,529	/, 790	143	4,020	0.49	94				
1201	7,J20 0,920	4,207	124	4,002	0.40	20 07				
1702	7,027 0,007	4,221	120	4,04/	0.47					
1702	0,77) 7 7(0	2,202	20 47	2,210	0.37	77 00				
1704	/,.209	2,924	4/	2,7/1	0,40					
Means S	tandard Deviations M	N's:								
69-73	12,465.4	4,190.0	425.0	4,615.0	0.37	90				
S.D.	1,489.2	5 9 7 . 9	144.8	627.9	0.03	2				
N	5	5	5	5	5	5				
74–78	9,753.4	3,936.0	137.4	4,073.4	0.42	97				
S.D.	1,832.3	1,704.0	81.9	1,687.1	0.06	1				
Ν	5	5	5	5	5	5				
79-83	9,195.8	3,861.8	138.8	4,000.6	0.44	96				
S.D.	476.9	565.4	114.6	607.0	0.02	1				
N	5	5	5	5	5	5				
69-83	10,471.5	3,995.9	233.7	4,229.7	0.40	94				
S.D.	1,960.4	1,021.9	176.8	1,054.4	0.02	1				
Ν	15	15	15	15	15	15				

Table 10. Sports hervest of Atlantic salmon in Area L, 1953-1984.

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Percent grilse is calculated by year class;

In the above table a period indicates no data for that year.

River	Exploitation rate		Additional fish	Required	Surplus to requirements	
	20%	40%	released	spawners	Maximum	Minimum
Little Codrov	368	138	731	463	638	406
Grand Codrov	7.460	2.798	4,108	3.511	8.057	3.395
Crabbes	1,912	717	2,416	2,345	1,983	788
Berachois	736	276	2,397	1,350	1,783	1,323
Robinsons	2,308	866	2,088	1,752	2,644	1,202
Fischells	928	348	1,249	2,137	40	-520
Flat Bay	1,392	522	1,714	2,904	202	-636
Little Barachois	432	162	837	759	510	240
Southwest +	2,648	993	4,737	2,795	4,590	2,935
Herry's	3,024	1,134	3,453	4,911	1,566	-274
Area K*	21,352	8,007	23,730	25,059	20,023	6,678
Fox Island	92	35	206	577	-271	-328
Serpentine	232	87	422	2,233	-1,543	-1,688
Hunber	12,100	4,538	4,239	18,452	-1,887	-9,449
Area L*	12,424	4,659	4,867	24,682	-7,121	-14,886

Table 11. Spawning escapements 1984 for rivers Areas K and L using two angling exploitation rates to derive river escapements; these are compared to the spawning requirements.

* Area totals may include data from a few other rivers; these rivers have been closed to angling since 1978.



Fig. 1. Boundaries of Statistical Section (numerically indicated) and Statistical Areas (alphabetical) in insular Newfoundland. Major river systems in Areas K and L are also shown.