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Comments on Canadian Salmon Populations in Relation  
to the West Greenland Fishery  
by R. L. Saunders

In the 1960's a new fishery for Atlantic salmon developed off the west coast of Greenland (Hansen Doc.69). In 1964 it reached substantial proportions suggesting questions about conservation and resource management throughout much of the ICNAF area. The problem may be stated as, how can the high seas fishery for salmon affect total stocks and reproductive potential. The problem can be approached on the basis of known life history of the species, and its solution will depend upon specially planned investigations. The capture, off Greenland, of salmon tagged at earlier stages in Europe and North America unquestionably points to the problem as one for international attention.

Table I. Commercial catches of Atlantic  
Salmon in Canada - Pounds

	<u>1962</u>	<u>1963</u>	<u>1964</u>
Newfoundland	2,333,000	2,517,000	2,452,000
Maritime Provinces	1,029,000	1,010,000	1,310,000
Quebec	<u>500,000</u>	<u>432,000</u>	<u>609,000</u>
Totals	3,862,000	3,959,000	4,371,000

Table II. Angling catches of Atlantic Salmon in  
Newfoundland and Maritime Provinces - Pounds

	<u>1962</u>	<u>1963</u>	<u>1964</u>
Newfoundland	79,400	114,100	190,000
Maritime Provinces	211,000	371,500	296,900

Salmon Stocks in Canadian Waters

Atlantic salmon in Canada support commercial and angling fisheries. The commercial catch in Newfoundland includes both grilse and larger salmon. In other provinces large salmon only are landed since commercial landing of grilse is unlawful. The poundage of recent commercial catches in Canada are given in Table I. In the future an attempt will be made to separate catches of grilse and larger salmon in Newfoundland.

Table III. Breakdown of angling catches  
in Newfoundland

<u>Year</u>	<u>Numbers caught</u>	
	<u>Grilse</u>	<u>Larger Salmon</u>
1958	18,762	3,521
1959	17,001	2,813
1960	16,294	2,067
1961	14,488	2,560
1962	23,469	2,683
1963	29,297	4,056

Table IV. Numbers of grilse and larger salmon taken  
in a sampling trap in Miramichi Estuary

<u>Year</u>	<u>Grilse</u>	<u>Larger Salmon</u>
1958	8,402	4,370
1959	2,160	4,300
1960	4,503	4,671
1961	6,852	2,992
1962	2,963	1,915
1963	14,109	1,639
1964	8,944	1,007

Angling catches in Newfoundland and the Maritime Provinces are given for recent years in Table II. Figures are for grilse and larger salmon combined. Table III shows the relation between grilse and larger salmon in angling catches in Newfoundland between 1958 and 1963.

Catches for 1958 through 1964 by an estuarial salmon sampling trap in the Miramichi River are given in Table IV. This small mesh sampling trap will catch grilse as well as the larger salmon which have survived a drift net fishery near the mouth of the river and a trap net fishery within the estuary.

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Table V. Northwest Miramichi River  
Counting Fence Records

Numbers ascending

<u>Year</u>	<u>Grilse</u>	<u>Larger Salmon</u>
1950	1,971	726
1951	2,183	812
1952	2,142	1,307
1953	2,165	1,033
1954	2,601	1,081
1955	2,756	782
1956	774	563
1957	875	706
1958	2,420	580
1959	7,355	1,002
1960	2,792	377
1961	954	877
1962	2,285	224
1963	6,088	309
1964	5,127	146

Table VI. Adult returns from tagged naturally-produced and  
hatchery-reared salmon smolts in Canadian Maritime  
Rivers

<u>Year</u>	<u>Naturally-produced</u>			<u>Hatchery-reared</u>		
	<u>Number Tagged</u>	<u>Total Returns</u>	<u>Greenland Returns</u>	<u>Number Tagged</u>	<u>Total Returns</u>	<u>Greenland Returns</u>
1960	750	26	1	-	-	-
1961	300	2	-	5,088	31	-
1962	5,612	203	2	2,000	?	1
1963*	4,550	68	7	6,000	137	4
1964	14,000			18,000		
1965	1,500 to date			25,000		

\*Grilse returns only

The spawning run in a large branch of the Miramichi River is counted and about 10% of the fish are measured and tagged at a counting fence 11 kilometers above the head of tide. Annual counts of grilse and larger salmon are given in Table V.

#### Smolt Tagging

Naturally-produced smolts have been tagged each year in the Northwest Miramichi River since 1960. Hatchery-reared smolts have been tagged and released in the Northwest Miramichi River in New Brunswick and the Margaree River, Nova Scotia since 1962. Numbers tagged and released each year are given in Table VI, together with total returns and returns from the Greenland fishery. All of these tagged salmon captured in Greenland were in their second year of sea life, having been released 16 to 18 months previously. As well as these captures, Saunders *et al.* (1965) list additional fish tagged as grilse and larger salmon by the Fisheries Research Board and as smolts or adults by other agencies.

Data in Table VI show that Greenland recaptures of salmon represented only small portions of the total fish tagged from 1960 through 1962. However, there was a striking increase in the returns from the Greenland fishery in 1964 of fish tagged in 1963. Intensive tagging programs are underway in 1964 and 1965 and are planned for several years to come.

#### Status of Information

The foregoing account shows the way various approaches to the problem have been begun in Canada. Probably some aspects of the work have to be expanded and data of new kinds may be required. The most promising new approach to the problem seems to be to start an intensive sampling and tagging program on the Greenland salmon fishery. Sampling should provide a substantial body of information on the lengths and ages (river and sea life) of salmon in the catches on different fishing grounds. Precautions should be taken to assure that small salmon which have recently entered salt water are not being selected against in the samples. Or, if this is impossible, a measure of the extent of selection should be sought. Tagging should be as extensive as feasible. As pointed out elsewhere, characteristics that can be used to distinguish salmon of European and North American origin in Greenland catches should be sought.

Information on the return from Greenland waters of tags put on salmon in Canadian rivers is given in: Saunders, R.L.; C. J. Kerswill and P. F. Elson. Canadian Atlantic salmon recaptured near Greenland. J. Fish. Res. Bd. Canada 22(2):625-629, 1965.