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Trawl caught Atlantic salmon on the  
Canadian continental shelf

by

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Introduction

The capture of Atlantic salmon (Salmo salar) at sea by otter trawls and by other types of gear has been reported by several authors. Balmain and Shearer (1956) reported that approximately 90 large salmon, 10 salmon kelts, 5 grilse and 3 pre-grilse were caught at sea in the vicinity of Scotland and northeast England during the period 1888-1954. Most of these fish were caught by trawl, but some were taken in seine nets, drift nets and in three instances by line. Twenty-three of the salmon recorded were taken from the stomachs of five sharks. Calderwood (1930), Menzies (1931) and Pyefinch (1952) gave accounts of Atlantic salmon caught at sea, mostly from the North Sea area. Nielsen (1961) reported that French, Icelandic and Faroese trawlers occasionally captured salmon in trawls during cod fishing on the West Greenland banks. Most of these salmon were caught on Store Hellefiske Banke (ca. 67°30'N) mainly at depths of 27-37 metres, chiefly in September-October. Although the trawl catches usually included only the occasional salmon, captures of up to 50 or more have been made in a single trawl haul for cod. All these records were obtained after 1945.

This report documents incidental catches of Atlantic salmon taken by trawlers on the Canadian continental shelf during 1933-74.



### Sources of data

The new records reported here were collected mainly by one of the following methods: voluntary reports by trawler captains; interviews with trawler captains by personal contact, telephone or questionnaire; examination of log records of trawlers.

When reports of incidental catches of salmon were obtained, the position, date and depth of capture, length and weight of salmon were recorded if available.

Copies of log records of all Newfoundland trawlers for the period 1956-74 were checked periodically to see if incidental catches of Atlantic salmon were obtained. During the recent trawlermen's strike in Newfoundland there was an excellent cooperative response to the telephone interviews and the mailed questionnaires by the trawler captains.

### Results

Fifty-four Atlantic salmon have been reported from incidental catches of otter trawls on the Canadian continental shelf off Newfoundland during 1933-74 (Table 1, Fig. 1). Of the 54 salmon for which area of capture is known, 27 (50%) were taken along the southwest edge of the Grand Bank. Most of the catches in this area were made during April-June but three were taken during February-March and 3 in the autumn. The salmon were in the weight range 3.6-4.5 Kg (weight range of 2-sea-year salmon) with a few individuals presumably being 3-year-salmon (8.2-11.0 Kg).

Nine salmon ranging in weight from 2.3 to 7.7 Kg were taken during May-June along the northern edge of the Grand Bank. The remaining catches on the Grand Bank were taken around the southwest edge, Whale Deep, near Cape Race and near the Virgin Rocks. Three were taken along the southwest edge of St. Pierre Bank, one on the northern edge of St. Pierre Bank and one on Burgeo Bank. There were five taken during March-May in the area around Cape Anquille in St. Georges Bay. The individual specimen taken during March is presumed to be a kelt since its flesh was almost white; it was slinky and the taste was unpalatable.

Most of the catches were made in areas where the water depths ranged from 70-180 m although the kelt taken off Cape Anquille was caught over a depth of 310 m. Of the 42 salmon for which estimated weights were reported, 8 (19%) were in the 1-sea-year weight range, 25 (60%) were in the 2-sea-year range, 8 (19%) were in the 3-sea-year range, while 1 (2%) was presumed to be a kelt on the basis of its flesh colour and poor condition.

### Discussion

During 30 April-1 May, 1966, seven salmon were caught from the A. T. Cameron by drift net over oceanic depths along the southwest edge of the Grand Bank (Templeman 1968). May (1973) reported catches of Atlantic salmon during spring along the northern edge of the Grand Bank by drift net and surface longline. Atlantic salmon have also been caught from the A. T. Cameron by drift net around the Virgin Rocks during May (Lear, unpublished data).

The repeated occurrences of Atlantic salmon in the 2- and 3-sea-year weight range during February-June suggest that the area around the southwestern Grand Bank and southwestern St. Pierre Bank where surface water temperatures are in the range of 3 to 6° C may be a wintering area of salmon which are destined to return to their rivers of origin that same spring. The low river ages of these fish (2 to 4 years (Templeman 1968)) suggest that these may be from rivers of western Newfoundland, Quebec and the Maritimes and possibly Maine. That they are so far south as late as June suggests that the southwestern Grand Bank and St. Pierre Bank slopes may form a winter-spring migration route of salmon from the Labrador Sea area. The relative abundance of the migrating stock in this area cannot presently be determined on the basis of otter trawl catches since a bottom otter trawl is probably quite inefficient for catching salmon. The salmon are presumably caught while the net is being hauled back up through the water column and the mouth of the net is still open. Possibly a significant portion of the large salmon from the Maritimes, Quebec and western Newfoundland may follow this migration route to their home spawning areas, thus escaping the commercial salmon fishery around the northeast and southeast coasts of Newfoundland.

What is needed at the present time is a combined drift net and tagging survey along the southwestern slope of the continental shelf off Newfoundland which would examine the area from the southeastern tip of the Grand Bank to Port aux Basques to determine the distribution and relative abundance of Atlantic salmon and the stock composition inasmuch as it can be determined from tag recaptures, scale characteristics and blood analyses. This information could have important implications in the formulation of Atlantic salmon management strategies for the Atlantic area.

### Acknowledgments

I am indebted to the late Dr A. A. Blair who collected the earlier records prior to 1966 and to Mr F. A. Day who assisted in interviewing trawler captains and helped compile the table and figure. The excellent cooperation of the trawler captains, some of whose names are mentioned in the table and without whose assistance and cooperation this report would not have been possible, is gratefully acknowledged.

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Table 1. Records of Atlantic salmon caught by trawlers fishing on the Canadian continental shelf, 1933-74.

Year	Date	Area	Type of gear	Lat. (°N)	Long. (°W)	Depth (m)	Weight (kg)	Ship and Captain
1933	Spring	SW edge Grand Bank	Beam trawl	-	-	-	-	CAPE AGULHAS, Capt. G. Fudge
1933	May 31	" " " "	" "	44°48'	52°10'	-	3.6	" " "
1947	June 1	" " " "	Otter trawl (side)	44°10'	52°00'	90	-	ZIBET, Capt. R. Moulton
1948	June 8	" " " "	" "	44°10'	52°00'	90	-	ZEBU, Capt. Vallis
1948	Spring	" " " "	" "	-	-	-	9.0	DINGO, Capt. R. Moulton
1949	April	" " " "	" "	-	-	-	-	ZABORA, Capt. R. Moulton
1949	April	" " " "	" "	-	-	-	-	" " "
1949	May 31	" " " "	" "	44°28'	52°36'	95	3.6	BLUE SPRAY, Capt. B. Blackwood
1949	June 6	" " " "	" "	44°41'	52°43'	90	4.5	" " "
1949	June	" " " "	" "	44°00'	52°00'	-	-	TORNADO (Spanish)
1951	June 6	" " " "	" "	44°00'	51°30'	80	5.4	FAIRFREE (English) Capt. J. White
1953	Feb. 11	" " " "	" "	44°35'	53°20'	120	4.5	NORDEASTER, Capt. J. Thornhill
1953	Spring	Off Miquelon Head	" "	-	-	-	4.5	ZEBROID, Capt. C. Mitchell
1955	Autumn	St. Pierre Bank	" "	-	-	-	3.6	ZARP, Capt. M. Hanrahan
1956	June	Whale Deep, Grand Bank	" "	-	-	-	-	ZIBET, Capt. F. Hollett
1956	August	St. Pierre Bank	" "	-	-	-	-	" " "
1957	Feb.	SW edge Grand Bank	" "	44°40'	52°50'	-	10.0	CLAMOR
1957	May	" " " "	" "	-	-	-	9.0	CLAYMORE, Capt. B. Blackwood
1958	May 10	" " " "	" "	44°30'	52°30'	90	-	BLUE SPRAY, Capt. G. Skinner
1958	May 10	" " " "	" "	44°30'	52°06'	80	4.5	BLUE HAZE II, Capt. B. Scott
1958	Spring	" " " "	" "	-	-	-	4.5	HERMITAGE, Capt. Moulton
1959	March	" " " "	" "	-	-	90-180	3.6-4.0	TRITON, Capt. W. Vardy
1960	May 13	" " " "	" "	44°32'	52°25'	88	-	ST. LEONARD
1961	May 9	" " " "	" "	43°20'	51°05'	-	5.4	NANCY J. FLETCHER
1962	May 14	30 miles east of Cape Race	" "	-	-	-	9.0	ZINNIA, Capt. C. Mitchell
1963	April	SW edge Grand Bank	" "	-	-	90-180	4.5	NANCY J. FLETCHER, Capt. V. Myles
1963	May 2	N Grand Bank	" "	47°39'	50°08'	-	3.2	BARBARA B. FLETCHER, Capt. O. Barnes

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Table 1. (Cont'd.)

Year	Date	Area	Type of gear	Lat. (°N)	Long. (°W)	Depth (m)	Weight (kg)	Ship and Captain
1965	April	7 miles off Bank Head, St. Georges Bay	Otter trawl (side)	-	-	90	1.8	RED DIAMOND II, Capt. J. Moulton
1965	May 31	N Grand Bank	" "	-	-	-	7.7	NANCY J. FLETCHER, Capt. V. Myles
1965	Sept.	Off Cape Pine	Otter trawl (stern)	46°34'	53°55'	55	1.8	ZONNEMAIRE, Capt. C. Mitchell
1966	March	Off Cape Anguille	Otter trawl (side)	-	-	310	6.8-8.2 (kelt)	ELIZABETH J. FLETCHER, Capt. A. Evans
1966	May 1	Off Cape Race	Otter trawl (stern)	46°10'	52°30'	100	3.6	ZEELAND, Capt. W. Brushett
1966	May 5	SW edge Grand Bank	" "	42°02'	52°23'	90-180	4.5	SANDRA L. GAGE, Capt. V. Myles
1966	May 20	" " " "	" "	43°18'	50°20'	70	11.0	ZAANDAM
1966	June 10	N Grand Bank	Otter trawl (side)	47°25'	49°20'	128	-	ZALEY, Capt. R. Moulton
1966	June 10	" " "	" "	47°25'	49°20'	128	-	" " "
1968	June	Burgeo Bank	" "	47°05'	58°10'	238	3.2	PENNYPRIDE, Capt. W. Vallis
1970	May	N edge Grand Bank	Otter trawl (stern)	-	-	73	2.3	ATLANTIC NORMA, Capt. G. Skinner
1970	June	SE Virgin Rocks	Otter trawl (side)	-	-	73	4.5	GEORGE KENTNER, Capt. A. Stone
1971	Spring	N edge Grand Bank	Otter trawl (stern)	-	-	90	3.6	ATLANTIC NORMA, Capt. G. Skinner
1972	Spring	" " " "	" "	-	-	90	2.3	ATLANTIC RUTHANN, Capt. L. Osborne
1972	Spring	" " " "	" "	-	-	90	3.6	" " "
1972	April	SW edge Grand Bank	" "	-	-	73	4.5	ZURICH, Capt. S. Corcoran
1973	May	Between St. Pierre Bank & Western Gullies	" "	-	-	180	4.5	ATLANTIC MARGARET, Capt. M. O'Keefe
1974	Spring	N edge Grand Bank	" "	-	-	90	2.3	" " "
1974	May	Off Cape Anguille	" "	-	-	165	4.5	CAPE FOX, Capt. J. Kilfoy
1974	May	" " "	" "	-	-	165	2.3	" " "
1974	May	" " "	" "	-	-	165	2.3	" " "
1974	May 15	SW edge St. Pierre Bank	Otter trawl (side)	-	-	180	2.3	NANCY J. FLETCHER, Capt. C. Skinner
1974	June	20-30 miles SE of Virgin Rocks	Otter trawl (stern)	-	-	60	4.5	FAME V, Capt. G. Cox
1974	July	" " "	" "	-	-	55	11.0	ZOGI, Capt. L. Abbott
1974	Autumn	SW edge Grand Bank	" "	-	-	90	9.0	ZAGREB, Capt. A. Power
1974	Autumn	" " " "	" "	-	-	90	4.5	" " "
1974	Autumn	" " " "	" "	-	-	90	4.5	" " "

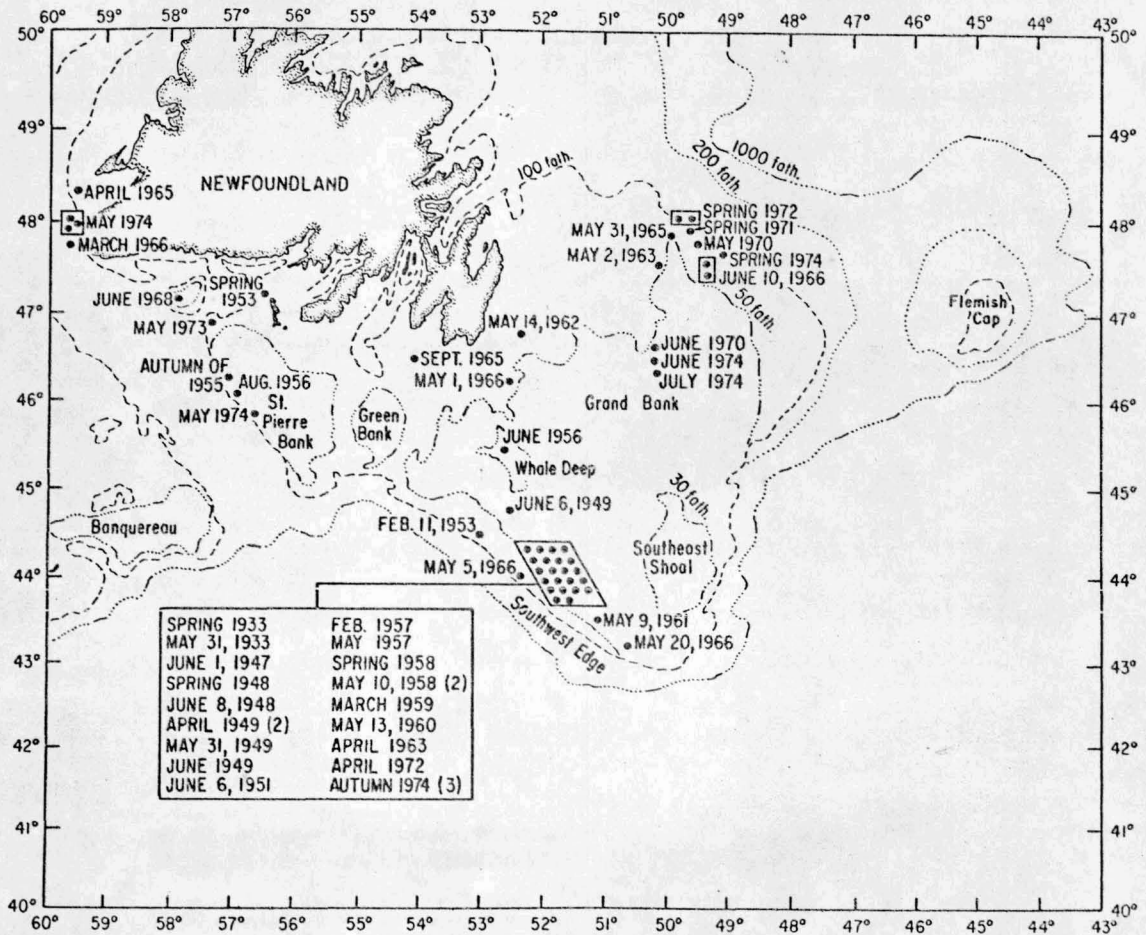


Fig. 1. Positions of capture of Atlantic salmon by otter trawlers on the continental shelf off Newfoundland during 1933-74.