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'Landings' and 'catches' in the Canadian Bay of Fundy  
herring fisheries, 1963-1971

by

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Recent developments in Canadian Bay of Fundy herring fisheries have been discussed in general terms by Iles and Tibbo (1970). It was recognised that detailed assessment of the situation that has resulted from the remarkable expansion of herring fisheries in the region in the 1960's was dependent both on a clearer appreciation of the stock relationships and on better information on the fisheries themselves. In particular, there was an urgent need for data on the area of capture of herring rather than on the port or district of landing, and for a more reliable breakdown of catch into adult and juvenile components.

While it is unlikely that a comprehensive and accurate analysis of the Canadian fisheries of the Bay of Fundy and its approaches for the 1960's will ever be possible, sufficient progress has been made for the results to serve as a basis for management of the herring stocks of the area. The basic assumption is that Canadian fisheries of the Bay of Fundy exploit stocks whose life history and seasonal movements carry them to areas supporting other (largely non-Canadian) fisheries and that management should therefore involve all areas in which these stocks are found.

The type of information required is the catch data for those individual Bay of Fundy fisheries listed in Table 1.

Table 1. Canadian Bay of Fundy herring fisheries

Area	ICNAF Div.	Gear	Size* Category	Season	Stock Relationship
Western (New Brunswick) Side	1	4X Weir	Juvenile ("sardine")	Summer	Progeny of Fall spawners in 5Y and 5Z
	2	4X Purse Seine	Juvenile ("brit")	Fall/Winter	
Eastern (Nova Scotia) Side	3	4X Purse Seine	Adult	Summer	Major, distinct spawning unit
	4	4X Weir	Juvenile ("sardine")	Summer	Progeny of 3
	5	4X Gill Net	Adult	Summer	Mixture of 3 and of small "local" stocks

\*The size distinction is not absolute; the New Brunswick fisheries do exploit a proportion of adults, the Nova Scotia weir fishery exploits some adults, and the Nova Scotia purse seine fishery some juveniles. However, for present purposes the distinction between adult and juvenile components is made on the basis of Table 1. "Sardine" is the name given to herring in their second full summer of life. "Brit" refers to herring in their first full summer and until the following late spring when they pass to the sardine stage.

Materials and Methods

These are dealt with under headings indicating sources of information.

Records of landings by "sales slips"

The Canadian Atlantic coastline is divided into Fishery Officer Districts. Individual transactions of sales of herring landed in each district are recorded on sales slips. For each transaction the date of purchase, weight of herring, type of gear used in capture, and/or the name of the catching vessel is listed.

"Mobile fleet" catches and landings

Sales slips referring to vessels in the "mobile fleet", i.e. of over 25 tons, but not those referring to herring caught in weirs or gill nets, are subsequently edited to give the known or suspected general area of capture. This information is available for the years 1966 through 1970, but is not yet available for 1971. Area of capture is to the level of ICNAF divisions but for no division is this more precise location of capture complete for any one year. In particular, the necessary distinction between the two sides of Division 4X (Bay of Fundy) is made for only a proportion of the sales. During the summer season there is considerable transport of herring from the Nova Scotia fisheries to plants in New Brunswick where they are recorded as landings in New Brunswick. There is virtually no transport of herring in the opposite direction. In official landings data these New Brunswick landings from Nova Scotia fisheries cannot be distinguished from New Brunswick caught fish landed in New Brunswick.

Exports of Canadian herring to the United States

Herring caught in Nova Scotia (4X) waters and in New Brunswick (4X) waters are exported to the United States, virtually all through the Maine ports of Eastport and Lubec. Records of these herring, giving date of entry, area of origin, and amount, are made available to Canada and are edited and allocated as landings to individual Fishery Officer Districts within the province (Nova Scotia or New Brunswick) of origin. However, once allocated in this way (by entry on a standard Canadian sales slip) they lose their identity as imports into the United States and are indistinguishable, in the Canadian statistics, from herring both caught and landed in an individual Fishery Officer District.

In more recent years Canadian vessels have carried out operations in waters outside those of Canada's coast, notably in Division 5Y (in the general Jeffreys Ledge area) and in 5Z (on the N.E. edge of Georges Bank). If these herring are landed in a Canadian province they are recorded as landings in a Fishery Officer District of that province, and because vessels engaged in these fisheries are all part of the "mobile fleet", the area of capture is recorded for the "mobile fleet" analysis.

A significant proportion of catches made by Canadian vessels in Sub-Area 5 is transferred to American vessels to be imported into Massachusetts' ports - mainly Gloucester and Portland. For 1968 certainly, but not for other years, records of these "Canadian imports" were available to Canada and these were then allocated as landings to those Fishery Officer Districts in which the (Canadian) catching vessel was registered. The ICNAF division of capture was also recorded as part of the system of statistics for the mobile fleet.

It is for this reason that Canadian ICNAF statistics of catches within the Convention area (with particular reference to Division 5Y) are more or less complete for 1968 but not for other years. For these other years only herring landed in Canadian ports (apart from those landed from the Bay of Fundy in Eastport or Lubec) are included in the Canadian ICNAF statistics.

Monthly listings of landings by Fishery Officer District and type of gear

Another important source of data is a breakdown of all herring appearing in the Canadian landings statistics (i.e. recorded on "sales slips") by Fishery Officer District of landings, month, and type of gear. This includes all "landed" herring from all types of gear and is available from the year 1963 through 1970.

St. Andrews Station "sales slip" coverage

In 1970 the St. Andrews Station initiated a system of recording herring landings at all the main herring plants along the New Brunswick shore to include also location of capture.\* To complement this, similar information for herring imported into the United States was obtained by the cooperation of staff of the U.S. National Marine Fisheries Service (NMFS). This system continued through 1971 during which year some plants in Nova Scotia were also covered. In addition, information for the years 1969 and 1968 was abstracted from historical records for the New Brunswick plants and for imports into the United States.

Obviously the analysis of such a heterogeneous set of data is complex and tedious to follow in detail. The main features of this analysis can be summed up in the following way:

1. The Nova Scotia gill net fishery lands herring near the area of capture and appear in local Fishery Officer District returns. Thus landings and catches of this inshore fishery can be equated.
2. Landings in Nova Scotia from weirs can all be allocated to the Nova Scotia weir fishery. Nova Scotia weir-caught fish imported into the United States are included in these landings. It is necessary, then, to identify New Brunswick landings of Nova Scotia weir-caught fish and to add these to Nova Scotia landings to get Nova Scotia catches. This can be done unequivocally for the years 1968-1971 using data obtained from the St. Andrews sales slip system.
3. Canadian records of landings of purse-seined fish in the Fishery Officer Districts of S.W. Nova Scotia already include those imported to United States from Nova Scotia. Fish caught in other areas and landed in Nova Scotia are identified by analysis of the mobile fleet records and subtracted from the total landings. Nova Scotia purse-seined fish landed in New Brunswick are identified (for the years 1968-1971) and are added to the Nova Scotia landings.

\*The sales slip system for herring was begun at the St. Andrews Station as part of the International Passamaquoddy Fisheries Board Investigations 1956-1959. In 1963 its continuation on a wider scale was passed over to the Economics Branch of the Department of Fisheries, but systematic recording of catch location was not continued.

4. Weir landings in New Brunswick already include New Brunswick caught fish exported to the United States but includes also fish transported to New Brunswick from Nova Scotia. These latter can be identified for the years 1968-1971 and are subtracted from the New Brunswick landings.
5. New Brunswick purse-seined landings and also herring imported into the United States include fish caught in other areas. For all areas except 4X (i.e., the Nova Scotia Bay of Fundy fishery) these are identified for 1966-1970 by the mobile fleet records and for the period 1968-1971 also by the St. Andrews sales slip system. Nova Scotia caught fish are identified by the same system and are also subtracted from landings.
6. Information for the whole of 1971 is based largely on the St. Andrews sales slip system, but monthly records of landings based on the official Canadian sales slip system are also available from January through October.

Coverage for the years 1968 through 1971 is therefore reasonable and for 1966 and 1967 it is adequate. Analysis for earlier years (1963 through 1965) is based on the fact that the fisheries were less developed, there was less transport of herring into the Bay of Fundy from areas outside the Bay, and patterns of landings and catches for the years 1968-1971 can be used to estimate the transport of herring across the Bay of Fundy.

Results

The results are listed in Tables 2-10. Tables 9 and 10 give the best estimates of catches in each of the fisheries listed in Table 1 for the years 1963 to 1970. For some of these good estimates can be given for 1971; for the others it is expected that further information will be available by the time of the meeting in Rome, January 1972, to indicate catch levels to a reasonable level of accuracy.

Three important features of the Tables 9 and 10 are the levels of catch for the Nova Scotia purse-seine fishery over the period 1966-1968, which indicate relatively small changes over these years, the considerable reduction in the size of the New Brunswick weir fisheries revealed by these catch figures and the decline to one third of peak levels in 1971, and the sharp reduction in general levels of catches (compared to landings) in the New Brunswick purse-seine fishery. This last fishery deserves more detailed comment.

The New Brunswick fall-winter purse-seine fishery

Canadian regulations have excluded purse seines from the New Brunswick side of the Bay of Fundy during the late spring and summer months since the beginning of the 1960's. This is to protect the weir fishery over that time of year when it is recording most of its catches. The purse-seine fishery begins in the fall when large schools of yearling herring (referred to as "brit") are found in the area, and continues into the early months of the following year. A variable proportion of large and adult herring is caught but the fishery is based largely on "brit" herring, most of which are less than 12 cm long; a high proportion of the catch from this fishery went for reduction.

Control of this fishery was considered to be urgently needed. It exploited enormous numbers of very small herring, a high proportion of which would be expected to survive. Some of these would make a contribution to the more valuable New Brunswick weir fishery but more would be expected, eventually, to augment the adult stocks to which they belong.

Measures to restrict this fishery were agreed upon as part of a Bilateral Agreement reached between the United States and Canada in 1971. The measures were based on size restriction and became effective in the Bay of Fundy as a whole (i.e., to include both New Brunswick and Nova Scotia waters) in September 1971.

3 A

The recent history of the fishery is shown in Fig. 1 which gives monthly landings for each season from 1967-1968. This indicates both the size of the fishery, when it was at its height, and its near extinction following the introduction of the controlling measures.

No herring were landed from the fishery in December 1971.

The large catches in 1967-1968 and 1968-1969 reflect the large size of the 1966 and 1967 year-classes as yearlings. Those of 1968 and 1969 are indicated as being considerably smaller (but by no means negligible).

Commercial fishermen in the Bay of Fundy area reported signs of large concentrations of "brit" herring near the entrance to the bay in the summer of 1971. Schools of brit were common in Passamaquoddy Bay near the St. Andrews Station over the same period, more so than in 1969 and 1970, so that it is concluded that the virtual extinction of this fishery results largely from the measures introduced in the fall of 1971.

Table 2. New Brunswick herring landings by month, gear and area of origin, 1968-1971 (metric tons) (from St. Andrews sales slip system).

1968									
Div.	4X Bay of Fundy				5Y and 5Z		4W Chedabucto Bay		
Area	New Brunswick		Nova Scotia		Weir	Purse Seine	Weir	Purse Seine	Total
	Gear	Month	Weir	Purse Seine					
Jan.	21.	1241.	-	-	-	-	-	-	1262.
Feb.	8.	1205.	-	-	-	-	-	-	1773.
Mar.	14.	2481.	-	-	-	-	-	-	2495.
Apr.	30.	341.	-	75.	-	109.	-	-	561.
May	1369.	-	1688.	53.	-	53.	-	-	3163.
June	1263.	-	1972.	1126.	-	-	-	-	4361.
July	3693.	-	1777.	4816.	-	246.	-	-	10532.
Aug.	3912.	-	204.	3416.	-	484.	-	-	8016.
Sept.	3847.	8.	292.	2890.	-	24.	-	-	7061.
Oct.	2513.	1123.	1620.	1434.	-	-	-	-	6690.
Nov.	672.	1568.	26.	-	-	-	-	-	2266.
Dec.	-	2388.	-	-	-	-	-	-	2388.
Total	17348.	10915.	7579.	13810.	-	916.	-	-	50568.

1969									
Div.	4X Bay of Fundy				5Y and 5Z		4W Chedabucto Bay		
Area	New Brunswick		Nova Scotia		Weir	Purse Seine	Weir	Purse Seine	Total
	Gear	Month	Weir	Purse Seine					
Jan.	43.	2217.	-	-	-	32.	-	-	2292.
Feb.	219.	482.	-	-	-	-	-	-	701.
Mar.	11.	62.	-	228.	-	25.	-	-	326.
Apr.	45.	-	78.	-	-	478.	-	-	601.
May	522.	144.	2245.	1062.	14.	230.	-	-	4217.
June	735.	-	3221.	3422.	-	-	-	-	7378.
July	4155.	49.	817.	4316.	-	-	-	-	9337.
Aug.	3751.	300.	547.	3688.	-	671.	-	-	8957.
Sept.	3013.	1046.	423.	1063.	-	2270.	-	-	7815.
Oct.	2100.	1974.	6.	-	-	220.	-	-	4300.
Nov.	284.	1487.	-	-	-	-	-	-	1771.
Dec.	-	201.	-	-	-	-	-	-	201.
Total	14878.	7962.	7337.	13779.	14.	3926.	-	-	47896.

Table 2. (continued)

1970									
Div.	4X				5Y and 5Z		4W		Total
Area	Bay of Fundy				Chedabucto Bay		Chedabucto Bay		
	New Brunswick		Nova Scotia						
Gear Month	Weir	Purse Seine	Weir	Purse Seine	Weir	Purse Seine	Weir	Purse Seine	
Jan.	-	294.	-	-	-	-	-	-	294.
Feb.	-	-	-	41.	-	-	-	611.	652.
Mar.	-	143.	-	-	-	-	-	561.	704.
Apr.	7.	99.	13.	-	-	102.	-	785.	1006.
May	23.	-	1190.	-	-	271.	-	-	1484.
June	244.	33.	2491.	2685.	-	-	-	-	5453.
July	1425.	42.	1688.	3596.	-	-	-	-	6751.
Aug.	1646.	-	937.	3962.	-	-	-	-	6545.
Sept.	2934.	1092.	268.	1036.	-	494.	-	-	5824.
Oct.	1280.	1274.	5.	147.	-	1035.	-	-	3741.
Nov.	120.	628.	-	140.	-	937.	-	-	1825.
Dec.	-	1246.	-	-	-	-	-	450.	1696.
<b>Total</b>	<b>7679.</b>	<b>4851.</b>	<b>6592.</b>	<b>11607.</b>	<b>-</b>	<b>2839</b>	<b>-</b>	<b>2407.</b>	<b>35975.</b>

1971									
Div.	4X				5Y and 5Z		4W		Total
Area	Bay of Fundy				Chedabucto Bay		Chedabucto Bay		
	New Brunswick		Nova Scotia						
Gear Month	Weir	Purse Seine	Weir	Purse Seine	Weir	Purse Seine	Weir	Purse Seine	
Jan.	266.	479.	-	-	-	-	-	2398.	3143.
Feb.	-	59.	-	-	-	-	-	2611.	2670.
Mar.	-	-	-	-	-	-	-	4168.	4168.
Apr.	19.	-	-	-	-	279.	-	1328.	1626.
May	83.	-	477.	-	-	-	-	-	560.
June	211.	-	1334.	3159.	-	-	-	-	4704.
July	1568.	22.	1066.	3045.	7.	62.	-	-	5770.
Aug.	1494.	53.	797.	2495.	-	-	-	-	4839.
Sept.	931.	315.	28.	1282.	-	3546.	-	-	6102.
Oct.	150.	399.	-	325.	-	751.	-	-	1625.
Nov.	38.	28.	-	32.	-	-	-	899.	997.
Dec.	-	-	-	-	-	-	-	3453.	3453.
<b>Total</b>	<b>4760.</b>	<b>1355.</b>	<b>3702.</b>	<b>10338.</b>	<b>7.</b>	<b>4638.</b>	<b>-</b>	<b>14857.</b>	<b>39657.</b>

Table 3. Imports of herring into the United States via Eastport and Lubec, by month, gear and area of origin, 1968-1971 (metric tons).

1968									
Div.	4X				5Y and 5Z		4W		Total
Area	Bay of Fundy				Chedabucto Bay		Chedabucto Bay		
	New Brunswick		Nova Scotia						
Gear Month	Weir	Purse Seine	Weir	Purse Seine	Weir	Purse Seine	Weir	Purse Seine	
Jan.	-	2586.	-	-	-	-	-	-	2586.
Feb.	-	3630.	-	182.	-	-	-	-	3812.
Mar.	-	5865.	-	510.	-	-	-	-	6375.
Apr.	125.	14.	-	94.	-	-	-	-	233.
May	663.	-	610.	46.	-	-	-	-	1319.
June	1250.	10.	742.	1966.	-	-	-	-	3968.
July	4039.	-	224.	7269.	-	-	-	-	11532.
Aug.	3221.	8.	38.	7336.	-	-	-	-	10603.
Sept.	3455.	3144.	120.	4145.	-	-	-	-	10864.
Oct.	2132.	8374.	-	-	-	-	-	-	10506.
Nov.	446.	2701.	-	-	-	-	-	-	3147.
Dec.	-	4854.	-	-	-	-	-	-	4854.
<b>Total</b>	<b>15331.</b>	<b>31186.</b>	<b>1734.</b>	<b>21548.</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>69799.</b>

1969									
Div.	4X				5Y and 5Z		4W		Total
Area	Bay of Fundy				Chedabucto Bay		Chedabucto Bay		
	New Brunswick		Nova Scotia						
Gear Month	Weir	Purse Seine	Weir	Purse Seine	Weir	Purse Seine	Weir	Purse Seine	
Jan.	16.	3172.	-	-	-	-	-	-	3188.
Feb.	10.	582.	-	-	-	-	-	-	592.
Mar.	9.	145.	-	606.	-	-	-	-	760.
Apr.	10.	-	-	20.	-	-	-	-	30.
May	315.	418.	593.	1488.	-	-	-	-	2814.
June	609.	-	835.	3975.	-	-	-	-	5419.
July	2075.	50.	60.	4896.	-	-	-	-	7081.
Aug.	2609.	1124.	126.	3667.	-	-	-	-	7526.
Sept.	2531.	3620.	16.	1820.	-	-	-	-	7987.
Oct.	1648.	1324.	-	11.	-	-	-	-	2983.
Nov.	164.	741.	-	-	-	-	-	-	905.
Dec.	-	305.	-	-	-	-	-	-	305.
<b>Total</b>	<b>9996.</b>	<b>11481.</b>	<b>1650.</b>	<b>16463.</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>39590.</b>

Table 3. (continued)

1970										
Div.	4X Bay of Fundy				5Y and 5Z		4W Chedabucto Bay			
Area	New Brunswick		Nova Scotia		Weir	Purse Seine	Weir	Purse Seine	Total	
	Gear	Month	Gear	Month						
Jan.	-	1311.	-	-	-	-	-	-	1311.	
Feb.	-	18.	-	57.	-	-	-	-	75.	
Mar.	-	848.	-	-	-	-	-	-	848.	
Apr.	38.	302.	-	-	-	-	-	-	340.	
May	-	-	542.	-	-	-	-	-	542.	
June	10.	-	400.	2225.	-	-	-	-	2635.	
July	1227.	-	1009.	2871.	-	-	-	-	5107.	
Aug.	1428.	-	802.	3214.	-	-	-	-	5444.	
Sept.	1492.	664.	642.	671.	-	-	-	-	3469.	
Oct.	1024.	2649.	15.	105.	-	-	-	-	3793.	
Nov.	51.	2203.	-	398.	-	2559.	-	-	5211.	
Dec.	-	2738.	-	-	-	-	-	-	2738.	
<b>Total</b>	<b>5270.</b>	<b>10733.</b>	<b>3410.</b>	<b>9541.</b>	<b>-</b>	<b>2559.</b>	<b>-</b>	<b>-</b>	<b>31513.</b>	

1971										
Div.	4X Bay of Fundy				5Y and 5Z		4W Chedabucto Bay			
Area	New Brunswick		Nova Scotia		Weir	Purse Seine	Weir	Purse Seine	Total	
	Gear	Month	Gear	Month						
Jan.	-	1695.	-	39.	-	-	-	591.	2325.	
Feb.	-	7.	-	42.	-	-	-	2580.	2629.	
Mar.	-	37.	-	-	-	-	-	2296.	2333.	
Apr.	-	-	118.	-	-	-	-	770.	888.	
May	77.	3.	993.	32.	-	-	-	-	1105.	
June	108.	-	1316.	1417.	-	-	-	-	2841.	
July	1274.	-	679.	1323.	-	-	-	-	3270.	
Aug.	1187.	-	500.	1797.	-	-	-	-	3484.	
Sept.	1544.	106.	156.	1566.	-	-	-	-	3372.	
Oct.	569.	208.	-	783.	-	-	-	-	1560.	
Nov.	13.	122.	-	340.	-	-	-	1968.	2443.	
Dec.	11.	-	-	-	-	-	-	-	11.	
<b>Total</b>	<b>4783.</b>	<b>2178.</b>	<b>3762.</b>	<b>7339.</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>8205.</b>	<b>26267.</b>	

Table 4. New Brunswick Bay of Fundy landings, by gear and month, for the years 1963-1970.

Month	1963	1964	1965	Weir 1966	1967	1968	1969	1970
	Jan.	23	-	-	-	-	-	-
Feb.	9	-	-	-	-	-	-	-
Mar.	9	14	9	-	-	-	-	-
Apr.	154	86	322	32	18	36	204	59
May	699	399	2,028	2,913	544	312	3,035	1,783
June	3,484	3,920	5,807	9,128	6,946	5,059	4,973	3,003
July	9,700	8,661	8,938	12,418	10,372	10,285	7,745	4,864
Aug.	6,148	8,684	9,006	9,491	8,189	7,840	7,255	4,891
Sept.	4,215	3,943	5,916	4,678	5,667	7,885	5,971	4,991
Oct.	3,484	1,357	1,624	880	2,709	4,487	3,403	2,382
Nov.	141	268	54	64	1,511	817	408	309
Dec.	127	-	-	-	18	27	-	14
<b>Total</b>	<b>28,193</b>	<b>27,332</b>	<b>33,704</b>	<b>39,604</b>	<b>35,974</b>	<b>39,548</b>	<b>32,994</b>	<b>22,296</b>

Month	1963	1964	1965	Purse Seine 1966	1967	1968	1969	1970
	Jan.	1,034	2,137	3,017	257	6,002	3,934	5,508
Feb.	322	2,513	1,570	132	3,108	7,159	1,275	109
Mar.	104	576	1,502	1,946	885	8,507	449	1,057
Apr.	9	-	145	2,657	68	1,012	526	567
May	222	-	45	254	-	181	1,810	309
June	14	59	495	898	2,046	3,267	3,911	2,831
July	617	635	2,554	5,517	6,928	11,288	5,013	4,514
Aug.	1,461	535	2,854	6,502	8,806	9,600	6,116	4,496
Sept.	3,421	3,203	8,412	14,382	7,218	11,129	8,380	3,584
Oct.	4,569	5,962	4,741	7,776	5,317	13,525	4,074	5,227
Nov.	517	3,879	2,051	3,598	3,720	5,948	2,269	4,287
Dec.	345	2,418	1,878	5,381	5,149	7,327	517	4,083
<b>Total</b>	<b>12,635</b>	<b>21,917</b>	<b>29,264</b>	<b>49,300</b>	<b>49,247</b>	<b>82,877</b>	<b>39,848</b>	<b>32,734</b>

Month	TOTAL							
	1963	1964	1965	1966	1967	1968	1969	1970
Jan.	1,057	2,137	3,017	257	6,002	3,934	5,508	1,670
Feb.	331	2,513	1,570	132	3,108	7,159	1,275	109
Mar.	113	590	1,511	1,946	885	8,507	449	1,057
Apr.	163	86	467	2,689	86	1,048	730	626
May	921	399	2,073	3,167	544	3,293	4,845	2,092
June	3,498	3,979	6,302	10,026	8,992	8,326	8,884	5,834
July	10,317	9,296	11,492	17,935	17,300	21,593	12,758	9,378
Aug.	7,609	9,219	11,860	15,933	16,995	17,440	13,371	9,387
Sept.	7,636	7,146	14,328	19,060	12,885	19,014	14,351	8,575
Oct.	8,053	7,319	6,365	8,656	8,026	18,012	7,477	7,609
Nov.	658	4,147	2,105	3,662	5,231	6,765	2,677	4,596
Dec.	472	2,418	1,878	5,381	5,167	7,354	517	4,097
<b>Total</b>	<b>40,828</b>	<b>47,249</b>	<b>62,968</b>	<b>88,904</b>	<b>85,221</b>	<b>122,425</b>	<b>72,842</b>	<b>55,030</b>

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Table 5. Nova Scotia Bay of Fundy landings, by gear and month, for the years 1963-1970.

	<u>Gill Net</u>							
	1963	1964	1965	1966	1967	1968	1969	1970
Jan.	-	-	-	-	-	-	-	-
Feb.	-	-	-	-	-	-	-	-
Mar.	-	-	-	-	-	-	-	-
Apr.	-	5	-	27	9	9	32	50
May	181	172	64	195	54	299	77	222
June	1,057	2,704	1,665	1,406	1,597	340	844	2,051
July	2,238	3,135	13,964	2,400	3,816	3,969	1,887	2,513
Aug.	3,929	2,051	4,578	2,563	3,493	4,433	3,022	3,503
Sept.	1,883	1,488	1,316	1,955	1,602	1,082	485	1,225
Oct.	213	236	186	544	513	59	41	45
Nov.	54	-	14	27	-	9	-	5
Dec.	-	5	-	-	-	-	-	-
Total	9,554	9,796	21,787	9,117	11,084	9,200	6,388	9,614
	<u>Weir</u>							
Jan.	-	-	-	-	-	-	-	-
Feb.	-	-	-	-	-	-	-	-
Mar.	-	-	-	-	-	-	14	18
Apr.	-	-	23	14	5	-	64	848
May	54	422	490	236	250	785	771	699
June	1,642	5,203	3,152	1,130	2,663	2,396	1,275	1,647
July	2,659	4,070	3,040	1,688	2,241	907	617	1,152
Aug.	554	2,590	2,364	612	1,125	640	608	726
Sept.	95	132	894	23	195	186	50	22
Oct.	336	5	59	9	9	23	-	-
Nov.	-	5	-	-	-	-	-	-
Dec.	-	-	-	-	-	-	-	-
Total	5,340	12,427	10,022	3,712	6,488	4,937	3,399	5,112
	<u>Purse Seine</u>							
Jan.	-	-	-	109	45	3,670	3,490	1,406
Feb.	-	-	-	-	172	4,469	9,550	1,710
Mar.	-	-	2,577	2,291	-	7,935	7,395	2,146
Apr.	-	-	9	3,729	367	2,128	1,874	966
May	-	-	118	508	-	1,289	2,001	41
June	226	1,298	2,541	9,243	11,492	11,547	12,168	6,565
July	3,262	6,025	4,396	21,416	22,903	34,236	16,506	13,402
Aug.	3,270	7,973	12,684	35,579	35,842	49,753	21,192	19,069
Sept.	2,612	3,761	7,876	14,293	22,036	22,141	10,771	11,111
Oct.	440	1,447	1,270	1,756	2,042	4,356	2,363	3,943
Nov.	27	54	95	-	567	1,189	381	4,151
Dec.	-	-	-	18	2,332	726	250	64
Total	9,887	20,558	31,566	88,942	97,798	143,439	87,941	64,574
	<u>TOTAL</u>							
Jan.	-	-	-	109	45	3,670	3,490	1,406
Feb.	-	-	-	-	172	4,469	9,550	1,710
Mar.	-	-	2,577	2,291	-	7,935	7,409	2,164
Apr.	-	5	32	3,770	381	2,137	1,970	1,864
May	235	594	672	939	304	2,373	2,849	962
June	2,925	9,205	7,358	11,779	15,752	14,283	14,287	10,263
July	8,159	13,230	21,400	25,504	28,960	39,112	19,010	17,067
Aug.	7,753	12,614	19,626	38,754	40,460	54,826	24,822	23,298
Sept.	4,590	5,381	10,086	16,271	23,833	22,409	11,306	12,358
Oct.	1,039	1,688	1,515	2,309	2,564	4,438	2,404	3,988
Nov.	81	59	109	27	567	1,198	381	4,156
Dec.	-	5	-	18	2,332	726	250	64
Total	24,782	42,781	63,375	101,771	115,370	157,576	97,728	79,300

Table 6. Catches of the New Brunswick fall-winter purse-seine fishery (from Tables 2 and 3).

Month	1968			1969		
	Landed in			Landed in		
	N.B.	U.S.A.	Total	N.B.	U.S.A.	Total
Jan.	1,241	2,586	3,827	2,217	3,172	5,389
Feb.	1,765	3,630	5,395	482	582	1,064
Mar.	2,481	5,865	8,346	62	145	207
Apr.	341	14	355	-	-	-
May	-	-	-	144	418	562
June	-	10	10	-	-	-
July	-	-	-	49	50	99
Aug.	-	8	8	300	1,124	1,424
Sept.	8	3,144	3,152	1,046	3,620	4,666
Oct.	1,123	8,374	9,497	1,974	1,324	3,298
Nov.	1,568	2,701	4,269	1,487	741	2,228
Dec.	2,388	4,854	7,242	201	305	506
Total	10,915	31,186	42,101	7,962	11,481	19,443
	1970			1971		
	Landed in			Landed in		
	N.B.	U.S.A.	Total	N.B.	U.S.A.	Total
Jan.	294	1,311	1,605	479	1,695	2,174
Feb.	-	18	18	59	7	66
Mar.	143	848	991	-	37	37
Apr.	99	302	401	-	-	-
May	-	-	-	-	3	3
June	33	-	33	-	-	-
July	42	-	42	22	-	22
Aug.	-	-	-	53	-	53
Sept.	1,092	664	1,756	315	106	421
Oct.	1,274	2,649	3,923	399	208	607
Nov.	628	2,203	2,831	28	122	150
Dec.	1,246	2,738	3,984	-	-	-
Total	4,851	10,733	15,584	1,355	2,178	3,533

Table 7. Mobile fleet herring landings (metric tons) in Division 4X from areas outside Division 4X.

4X Nova Scotia	Area of Capture					Total
	Div. 5Y	Div. 5Z	Div. 4W	Div. 4T	Subarea 3	
1966	-	-	-	-	-	-
1967	555	806	-	-	2,213	3,574
1968	7,025	10,758	-	2,013	16,134	35,930
1969	3,461	873	21,240	377	-	25,951
1970	2,783	7	6,326	136	327	9,579

4X New Brunswick	Area of Capture					Total
	Div. 5Y	Div. 5Z	Div. 4W	Div. 4T	Subarea 3	
1966	-	-	-	-	-	-
1967	4,651	499	-	-	-	5,150
1968	14,471	2,916	-	236	-	17,623
1969	3,934	72	-	17	-	4,023
1970	2,222	-	-	16	-	2,238

Table 8. Comparison of Canadian "landings" (metric tons) with "St. Andrews statistics": New Brunswick-Bay of Fundy.

1968							
Weir							
Month	(1) N.B. Landing	Caught Landing (2) Total	N.S. N.B.	S-area 5 N.B.	N.B. N.B.	N.B. U.S.A.	(3) Total
	"St. Andrews Statistics"						
1	-	21	-	-	21	-	21
2	-	8	-	-	8	-	8
3	-	14	-	-	14	-	14
4	36	161	-	-	36	125	161
5	312	3720	1688	-	1369	663	2032
6	5059	4485	1972	-	1263	663	2513
7	10285	9509	1777	-	3693	4039	7732
8	7840	7337	204	-	3912	3221	7133
9	7885	7594	292	-	3847	3455	7302
10	4487	6265	1620	-	2513	2132	4645
11	817	1144	26	-	672	445	1118
12	27	-	-	-	-	-	-
	39548	40258	7579	-	17348	15331	32679
Purse Seine							
Month	N.B. Landing	Caught Landing Total	N.S. N.B.	S-area 5 N.B.	N.B. N.B.	N.B. U.S.A.	Total
	"St. Andrews Statistics"						
1	3934	3827	-	-	1241	2586	3827
2	7159	5395	-	-	1765	3630	5395
3	8507	8346	-	-	2481	5865	8346
4	1012	539	75	109	341	14	355
5	181	106	53	53	-	-	-
6	3267	1146	1126	-	-	10	10
7	11288	5062	4816	246	-	-	-
8	9600	3908	3416	484	-	8	8
9	11129	6066	2890	24	8	3144	3152
10	13525	10931	1434	-	1123	8374	9497
11	5948	4269	-	-	1568	2701	4269
12	7327	7247	-	-	2388	4854	7242
	82877	56827	13810	916	10915	31186	42101

Note: Georges Bank (5Z) - 2916    Gulf (4T) - 236 } Not included in  
 Jeffreys Ledge (5Y) - 14471 } St. Andrews statistics

Notes: (1) Canadian Bay of Fundy New Brunswick landings data  
 (2) Total Bay of Fundy New Brunswick landings - "St. Andrews" data  
 (3) Total Bay of Fundy New Brunswick catches

Table 8. (continued)

1969							
Weir							
Month	N.B. Landing	Caught Landing	N.S. N.B.	S-area 5 N.B.	N.B. N.B.	N.B. U.S.A.	Total
1	-	59	-	-	43	16	59
2	-	229	-	-	219	10	229
3	-	20	-	-	11	9	20
4	204	133	78	-	45	10	55
5	3035	3096	2245	14	522	315	837
6	4973	4565	3221	-	735	609	1344
7	7745	7047	817	-	4155	2075	6230
8	7255	6907	547	-	3751	2609	6360
9	5971	5967	423	-	3013	2531	5544
10	3403	3754	6	-	2100	1648	3748
11	408	448	-	-	284	164	448
12	-	-	-	-	-	-	-
	32994	32225	7337	14	14878	9996	24874

Note: 426 tons from areas other than covered by this table.

Purse Seine							
Month	N.B. Landing	Caught Landing	N.S. N.B.	S-area 5 N.B.	N.B. N.B.	N.B. U.S.A.	Total
1	5508	5421	-	32	2217	3172	5389
2	1275	1064	-	-	482	582	1064
3	449	460	228	25	62	145	207
4	526	478	-	478	-	-	-
5	1810	1854	1062	230	144	418	562
6	3911	3422	3422	-	-	-	-
7	5013	4415	4316	-	49	50	99
8	6116	5783	3688	671	300	1124	1424
9	8380	7999	1063	2270	1046	3620	4666
10	4074	3518	-	220	1974	1324	3298
11	2269	2228	-	-	1487	741	2228
12	517	506	-	-	201	305	506
	39848	37148	13779	3926	7962	11481	19443

Table 8. (continued)

1970							
Weir							
Month	N.B. Landing	Caught Landing	N.S. N.B.	S-area 5 N.B.	N.B. N.B.	N.B. U.S.A.	Total
Jan.	-	-	-	-	-	-	-
Feb.	-	-	-	-	-	-	-
Mar.	-	-	-	-	-	-	-
Apr.	59	58	13	-	7	38	45
May	1783	1213	1190	-	23	-	23
June	3003	2745	2491	-	244	10	254
July	4864	4342	1688	-	1425	1227	2652
Aug.	4891	4011	937	-	1646	1428	3074
Sept.	4991	4694	268	-	2934	1492	4426
Oct.	2382	2309	5	-	1280	1024	2304
Nov.	309	171	-	-	120	51	171
Dec.	14	-	-	-	-	-	-
Total	22296	19541	6592	-	7679	5270	12949

Purse Seine							
Month	N.B. Landing	Caught Landing	N.S. N.B.	S-area 5 N.B.	N.B. N.B.	N.B. U.S.A.	Total
Jan.	1670	1605	-	-	294	1311	1605
Feb.	109	59	41	-	-	18	18
Mar.	1057	991	-	-	143	848	991
Apr.	567	503	-	102	99	302	401
May	309	271	-	271	-	-	-
June	2831	2718	2685	-	33	-	33
July	4514	4556	3596	-	42	-	42
Aug.	4496	3962	3962	-	-	-	-
Sept.	3584	3286	1036	494	1092	664	1756
Oct.	5227	5105	147	1035	1274	2649	3923
Nov.	4287	3908	140	937	628	2203	2831
Dec.	4083	3984	-	-	1246	2738	3984
Total	32734	30030	11607	2839	4851	10733	15584

Other landings: 2407 - Chedabucto Bay - Purse seine  
658 - Gill nets



Table 8. (continued)

1971							
Weir							
Month	N.B. Landing	Caught Landing	N.S. N.B.	S-area 5 N.B.	N.B. N.B.	N.B. U.S.A.	Total
Jan.		266	-	-	266	-	266
Feb.		-	-	-	-	-	-
Mar.		-	-	-	-	-	-
Apr.		19	-	-	19	-	19
May		637	477	-	83	77	160
June		1653	1334	-	211	108	319
July		3915	1066	7	1568	1274	2842
Aug.		3478	797	-	1494	1187	2681
Sept.		2503	28	-	931	1544	2475
Oct.		719	-	-	150	569	719
Nov.		51	-	-	38	13	51
Dec.		11	-	-	-	11	11
		13252	3702	7	4760	4783	9543
Purse Seine							
Month	N.B. Landing	Caught Landing	N.S. N.B.	S-area 5 N.B.	N.B. N.B.	N.B. U.S.A.	Total
Jan.		2174	-	-	479	1695	2174
Feb.		66	-	-	59	7	66
Mar.		37	-	-	-	37	37
Apr.		279	-	279	-	-	-
May		3	-	-	-	3	3
June		3159	3159	-	-	-	-
July		3129	3045	62	22	-	22
Aug.		2548	2495	-	53	-	53
Sept.		5249	1282	3546	315	106	421
Oct.		1683	325	751	399	208	602
Nov.		182	32	-	28	122	150
Dec.		-	-	-	-	-	-
		18509	10338	4638	1355	2128	3533

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Table 9. Bay of Fundy New Brunswick herring fisheries, landings and catches (metric tons).

Weir						
Year	'Landings'	N.S.→N.B. (1)	Catch	St. Andrews Statistics (2)		
1963	28,193	-	28,193	-	-	-
1964	27,332	-	27,332	-	-	-
1965	33,704	2,000	31,704	-	-	-
1966	39,604	4,000	35,604	-	-	-
1967	35,974	6,000	29,774	-	-	-
1968	39,548	7,579	31,969	32,679	-	-
1969	32,994	7,337	25,657	24,874	-	-
1970	22,296	6,592	15,704	12,949	-	-
1971	Not available	3,702	9,543	9,543	-	-
Purse Seine						
Year	'Landings'	N.S.→N.B.	Subarea 5 →N.B.	Others →N.B.	Catch	St. Andrews Statistics
1963	12,635	5,214	-	-	7,421	-
1964	21,917	4,344	-	-	17,573	-
1965	29,264	11,944	-	-	17,320	-
1966	49,300	23,555	-	-	25,745	-
1967	49,247	23,180	-	-	26,067	-
1968	82,877	13,810	17,387	-	51,680	42,101
1969	39,848	13,779	3,926	-	21,717	19,443
1970	32,734	11,607	2,839	426	17,630	15,584
1971	Not available	10,338	4,638	658	3,533	3,533

- Notes: (1) Transport of Nova Scotia weir-caught fish into New Brunswick is a recent development. Figures for 1965-1967 are estimates.
- (2) Derived from Table 8.
- (3) For the years 1963-1967 the Nova Scotia component of New Brunswick landings is estimated from the monthly distribution of landings using the St. Andrews statistics for 1968-1971 to derive correction factors.

Table 10. Bay of Fundy Nova Scotia herring fisheries; landings and catches (metric tons).

Gill Nets					
Year	Catch				
1963	9,554				
1964	9,796				
1965	21,787				
1966	9,117				
1967	11,084				
1968	9,200				
1969	6,388				
1970	9,614				
1971	Not available				

Weir			
Year	'Landings'	N.S.+N.B.	Catch
1963	5,340	-	5,340
1964	12,427	-	12,427
1965	10,022	2,000	12,022
1966	3,712	4,000	7,712
1967	6,488	6,000	12,488
1968	4,937	7,579	12,516
1969	3,399	7,337	10,736
1970	5,112	6,592	11,704
1971	Not available	3,702	9,682 (1)

Purse Seine					
Year	'Landings'	N.S.+N.B.	Subarea 5 →N.S.	Others →N.S.	Catch
1963	9,887	5,214	-	-	15,101
1964	20,558	4,344	-	-	24,902
1965	31,566	11,944	-	-	43,510
1966	88,942	23,555	-	-	112,497
1967	97,798	23,180	1,361	2,213	117,404
1968	143,439	13,810	17,783	18,147	121,319
1969	87,941	13,779	4,334	21,617	75,769
1970	64,574	11,607	2,790	6,789	66,602
1971	Not available	10,338	11,966(2)	5,640	-

Notes: (1) From 1968-1970 an average of 2,218 m. tons were actually landed in Nova Scotia. This is added to the 1971 data for transport to New Brunswick and the USA to give the estimate of 9,682 m. tons.

(2) To the end of September only.

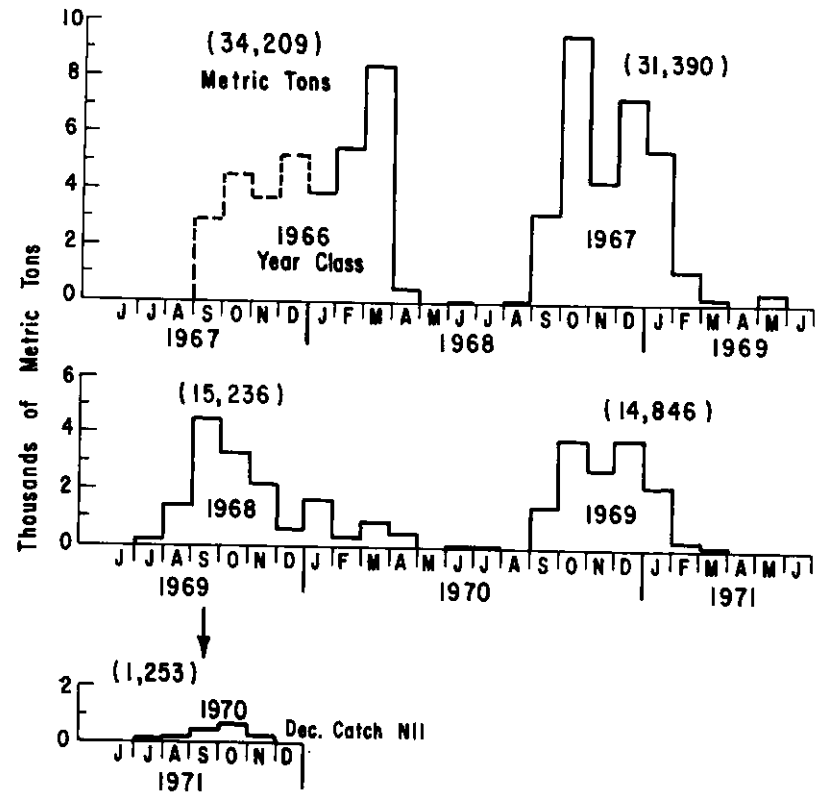


Fig. 1. The New Brunswick fall-winter purse-seine fishery, monthly catches for the period 1967-1971.