

FISHERIES RESEARCH BOARD OF CANADA
(FORMERLY BIOLOGICAL BOARD OF CANADA)

UNDER THE CONTROL OF
THE HON. THE MINISTER OF FISHERIES

BULLETIN No. LXI

CANADIAN ATLANTIC OFFSHORE COD FISHERY
EAST OF HALIFAX

BY
R. A. McKENZIE
Atlantic Biological Station

OTTAWA
1942

CANADIAN ATLANTIC OFFSHORE COD FISHERY EAST OF HALIFAX

BY R. A. MCKENZIE
Atlantic Biological Station

INTRODUCTION

This account is based on the landings of cod from the offshore banks east of Halifax during the years 1938 and 1939. Since these landings are not referred to individual banks by the officials who report them, the catch has been allocated by means of information obtained through daily interviews with the many skippers who land at Halifax. The distribution of the catch is shown graphically as the fishery changes month by month.

The Fisheries Statistics of Canada, published yearly, defines the "offshore" catch as that of "sea fish taken offshore by steam trawlers and vessels of 40 tons or over fishing on offshore grounds". In actual practice the size of the boat usually governs the category of the landings, and the fishing location is rarely considered. Consequently, some fish caught by large vessels inshore are recorded as from offshore and some fish caught by small vessels fishing offshore are recorded as from inshore. It has been determined that in 1938 and 1939 about 3 to 5 per cent of the recorded "offshore landings" rightly belong in the inshore category. The quantities landed by small vessels fishing offshore are relatively smaller.

To make a clear-cut difference between these two classes of fishing, it is suggested that all fishing grounds inside the 60-fathom contour along the coast be considered as "inshore grounds" and all those outside as "offshore grounds". Any coastwise channel as deep as 60 fathoms would thus separate these two classes of grounds. All the banks off the outer Nova Scotian coast, except Roseway, Curdo and Scatari, would thus be considered as "offshore grounds". The above three banks are usually populated by what may be called resident shore fish.

TOTAL "OFFSHORE" BANK PRODUCTION

Table I gives a comparison of the Canadian and United States (data from the monthly statistical bulletins of the Bureau of Fisheries) cod catches made on the offshore grounds east of Halifax. Some of the United States fishing is done along shore, e.g. off southern Newfoundland, around the Magdalen islands and off Cape Breton. Practically no Canadian operations are carried on in the first-mentioned of these districts, and the catches in the other two are recorded in the "inshore landings" division.

Canadian operations far exceed those of the United States in the regions east of Banquereau, but on Banquereau itself the United States cod catches

exceeded the Canadian by about four million pounds, while considering Sable Island bank as a whole, they exceeded the Canadian catches by about eight million pounds, or they were nearly twice as great. On Emerald bank the United States catches were about seven times as great as the Canadian and as one proceeds southwestward into the gulf of Maine, the proportion of United States catches to Canadian increases.

TABLE I. Canadian and United States cod landings from "Offshore grounds east of Halifax," in thousands of pounds

| Region | U.S.A. 1938 | Canadian average for 1938 and 1939 | Total |
|-----------------------------------------------------|----------------|------------------------------------------|---------|
| South coast of Newfoundland..... | 1,208 | | 1,208 |
| Magdalen islands..... | 2,831 | | 2,831 |
| Gulf of St. Lawrence (unclassified) .. | 14 | 3,663 | 3,677 |
| Grand banks..... | 67 | 24,524 | 24,591 |
| St. Pierre bank..... | 38 | 9,093 | 9,131 |
| Newfoundland (unclassified)..... | 314 | | 314 |
| N.E. Cape Breton..... | 4 | | 4 |
| Misaine bank (B)..... | 21 | 2,116 | 2,137 |
| Banquereau (C)..... | 12,699 | 8,513 | 21,212 |
| Canso bank (D)..... | 13 | | 13 |
| Middle bank (E)..... | 2,283 | 3,177 | 5,460 |
| N.E. Sable Island bank (F)..... | 5,114 | 2,645 | 7,759 |
| S.E. " " " (G)..... | 853 | 673 | 1,526 |
| N.W. " " " (H)..... | 5,558 | 1,304 | 6,862 |
| S.W. " " " (J)..... | 8,796 | 7,682 | 16,478 |
| Emerald bank (L)..... | 5,818 | 828 | 6,646 |
| Central and eastern Nova Scotia (unclassified)..... | 72 | | 72 |
| Total..... | 45,703 | 64,218 | 109,921 |

The average landings from the Newfoundland "Deep Sea Fishery" (as compared to their "Inshore" and "Labrador" fisheries) is about seventy-five million pounds according to a communication from the Fisheries Research Institute of Newfoundland. A small portion of this comes from Banquereau and eastern Sable Island bank during the late winter and early spring.

Besides this, considerable fishing is carried on in this eastern Canadian area during the same period by French, Spanish and Portuguese vessels. A number of the captains of these vessels have been interviewed at Halifax.

The known landings from Misaine bank and Banquereau, made by Newfoundland, Canadian and United States boats is about twenty-five million pounds per year, while from Sable Island bank it is about thirty-five million pounds. It is probable that the total production of about sixty million pounds (or seventy

23342134 11/10/38

million if Middle bank and Emerald bank are included) from the eastern Canadian offshore grounds would be increased to about one hundred million pounds if the European catches were included.

CANADIAN FISHING METHODS

The total Canadian offshore landings (about sixty-five million pounds per year) represented during the last five years about 40 per cent of the total Canadian landings of cod. About one-half of these offshore landings were made by the "salt-fishing" vessels with line-trawl and bait, while the other half was landed by "fresh-fishing" steam drag trawlers and large vessels. These latter use much the same gear as the "salt fishermen", though the hooks are a little smaller. The "salt-fishing" vessels, as a rule, operate chiefly from the last half of March to September, while "fresh-fishing" is carried on throughout the year by the steam trawlers and some of the vessels. After "salt-fishing" is over, a large number of these vessels join the "fresh-fishing" fleet during the winter season.

In general, the large "salt-fishing" vessels (nearly all from Lunenburg) operate during their "frozen-baiting" trip in March and April on the western part of Sable Island bank. Most of the vessels on their second or "spring trip" go immediately to the Grand banks, but some may spend the first part of it on Sable Island bank or Banquereau. The two "summer trips" are spent principally on the eastern part of the Grand banks, though some time (varies from year to year depending on the abundance of cod on the Grand Banks) may be spent in the Canadian waters of the gulf of St. Lawrence, usually during the second "summer trip".

In "fresh-fishing" operations the steam trawlers operate out of Halifax, fishing the banks off and east of Halifax, and they rarely, if ever, go westward. Many of the vessels engaged in similar fishing, although belonging in Lunenburg, fish for companies located in such other ports as North Sydney, Canso, Halifax, Liverpool, Lockeport and on occasion, Shelburne and Yarmouth. In spite of the fact that a number of these ports are located in western Nova Scotia, by far the greater part of all these operations takes place on the banks east of Halifax. Rarely do these vessels fish on the banks west of Halifax.

The chief Canadian banks west of Halifax are La Have, Roseway and Browns. These are fished a little by the aforementioned fleet of vessels landing in southwestern Nova Scotia, and continuously, in both "salt-fishing" and "fresh-fishing", by a number of smaller vessels owned and operated out of this southwestern part of the province. However, it is found (from unpublished official monthly reports) that the landings from these "offshore grounds west of Halifax" as they are designated, comprised only between 6 and 7 per cent of the total Canadian "offshore" cod landings in 1938 and 1939. While little fished by Canadian vessels, these grounds are very productive for the United States fishermen.

STATISTICS OF "OFFSHORE" FISHERY

There have been few published records giving any details of the operations of the Canadian "offshore" fishermen. In the annual Fisheries Statistics their catches are given merely as having been made "offshore", while the location of the "inshore" catch is shown by districts, which may even be as small as parts of counties.

During the past few years, an attempt has been made to obtain details of the offshore fishery through quite regular wharf interviews at Halifax, and in many other ways. A great amount of exact information has been obtained on all species of fish landed, and the origin of about 25 per cent (excluding the "salt fish" landings, about 40 per cent) of all Canadian Atlantic cod landed from offshore during 1938 and 1939 has been determined. Since the vessels in each fleet usually fish near one another, it has been assumed that the remainder of the landings corresponded as to area of origin in each month with those whose origin is known. The errors of the method are realized, but the main results seem definitely worth while.

The letters used as headings in table II and on the charts (figs. 1 to 4) indicate the sub-areas of area XXI into which the eastern Canadian grounds have been divided by the North American Council on Fishery Investigations.

Sub-areas A, D and K embrace shore fishing grounds, though D contains Canso bank which has over 50 fathoms between it and the shore. However, this bank is rarely fished by the "offshore" fleet.

B embraces Misaine bank and part of Artimon bank, while C contains Banquereau and the southern part of Artimon. Middle bank is all within sub-area E. Western or Sable Island bank is divided into several sub-areas. F takes in the central part of the bank around Sable island, while G takes in the eastern tip and the southern edge. J contains the southwestern part of the bank, H the northwestern part and a lot of deep water between this bank and the shore grounds, and finally a small part of the northern edge of this bank extends into the southwestern part of sub-area E. L embraces Sambro and Emerald banks and the surrounding waters.

St. Pierre, Green and the Grand banks of Newfoundland are all in international statistical area XX, which unlike area XXI has not as yet been subdivided. This is true also for area XIX (gulf of St. Lawrence).

In table II a fairly accurate indication is given of what part each of the various offshore regions plays in the production of the total yearly cod landings in eastern Canada. The landings by the "offshore" fleet from such sub-areas as A, D and K have not been shown, since they belong more correctly to the inshore districts.

In this table also, an attempt has been made, based on interviews and the available records, to indicate the difference in origin between the "salt fish" landings and the "fresh fish" landings of cod. The outstanding features are the quantity of "salt fish" brought from the Grand banks as compared to "fresh fish",

and the widespread activity of the "fresh-fishing" fleet on the Canadian offshore grounds as compared to the "salt-fishing" fleet.

It should be mentioned that certain relatively small amounts of salted cod are landed as a side product of halibut fishing operations. Such landings, which have not been separated from those of the "salt fleet", come in large part from the Grand banks, but some (exact quantity unknown) should be credited to the Green bank area where a lot of halibut fishing is done.

In "fresh-fishing", with short trips of five to ten days, the fish caught in any one month are credited to that month, except possibly some of those caught the last few days of the month and landed early the next month. However, it should be noted that in "salt-fishing" a whole month's fishing and part of the next may be landed during, and credited to, this next month.

TABLE II. Cod landings from the various offshore regions in thousands of pounds, averaged for 1938 and 1939

| | Area XXI | | | | | | | | Gulf | Saint Pierre | Grand banks | Total |
|---------------------------|----------|-------|-------|-------|---------------|-------|-------|-----|-------|--------------|-------------|--------|
| | B | C | E | F | G | H | J | L | | | | |
| January..... | 452 | 390 | 602 | 78 | .. | 2 | 93 | 31 | .. | 76 | .. | 1,724 |
| February..... | 361 | 487 | 62 | .. | .. | 76 | 268 | 132 | .. | .. | .. | 1,386 |
| March..... | .. | 534 | 54 | .. | .. | 512 | 1,390 | 459 | .. | .. | .. | 2,949 |
| April..... | .. | 646 | 155 | 1,234 | 37 | 153 | 5,029 | 192 | .. | .. | .. | 7,446 |
| May..... | 144 | 812 | 300 | 931 | 135 | 305 | 328 | .. | .. | 335 | 164 | 3,454 |
| June..... | .. | 600 | 754 | 116 | 501 | 52 | .. | .. | .. | 1,300 | 6,201 | 9,524 |
| July..... | .. | 497 | 155 | 50 | $\frac{1}{2}$ | 50 | .. | .. | 95 | 1,134 | 7,110 | 9,091 |
| August..... | .. | 377 | 182 | 126 | .. | 76 | 182 | .. | 957 | 1,150 | 3,084 | 6,134 |
| September.... | .. | 53 | 207 | 70 | $\frac{1}{2}$ | 78 | 165 | 14 | 2,585 | 1,431 | 7,810 | 12,413 |
| October..... | .. | 1,972 | 254 | .. | .. | .. | .. | .. | 13 | 1,821 | 113 | 4,173 |
| November.... | 297 | 1,298 | 146 | .. | .. | .. | 2 | .. | 13 | 1,314 | 42 | 3,112 |
| December.... | 862 | 847 | 306 | 40 | .. | .. | 225 | .. | .. | 532 | .. | 2,812 |
| Totals.... | 2,116 | 8,513 | 3,177 | 2,645 | 673 | 1,304 | 7,682 | 828 | 3,663 | 9,093 | 24,524 | 64,218 |
| "Salt fish" landings.... | .. | .. | .. | 800 | 400 | .. | 3,000 | .. | 3,000 | .. | 24,510 | 31,710 |
| "Fresh fish" landings.... | 2,116 | 8,513 | 3,177 | 1,845 | 273 | 1,304 | 4,682 | 828 | 663 | 9,093 | 14 | 32,508 |

Hence, during the winter, when only "fresh-fishing" is done, the monthly landings correspond with the month's fishing. But during the "salt-fishing" season, the monthly landings will represent to quite an extent the fishing of the preceding month.

It will be evident from table II that there is a general shift to the more easterly grounds in summer and back to the west in winter.

The monthly charts of the fishery (figs. 1 to 4) show this seasonal shift much better. In these charts the average landings of cod in thousands of pounds by Canadian fishermen from each region during the month for 1938 and 1939 are given, and the relative amounts are to some extent indicated by the degree of darkening produced by closeness of spacing of lines. Where no lines have been

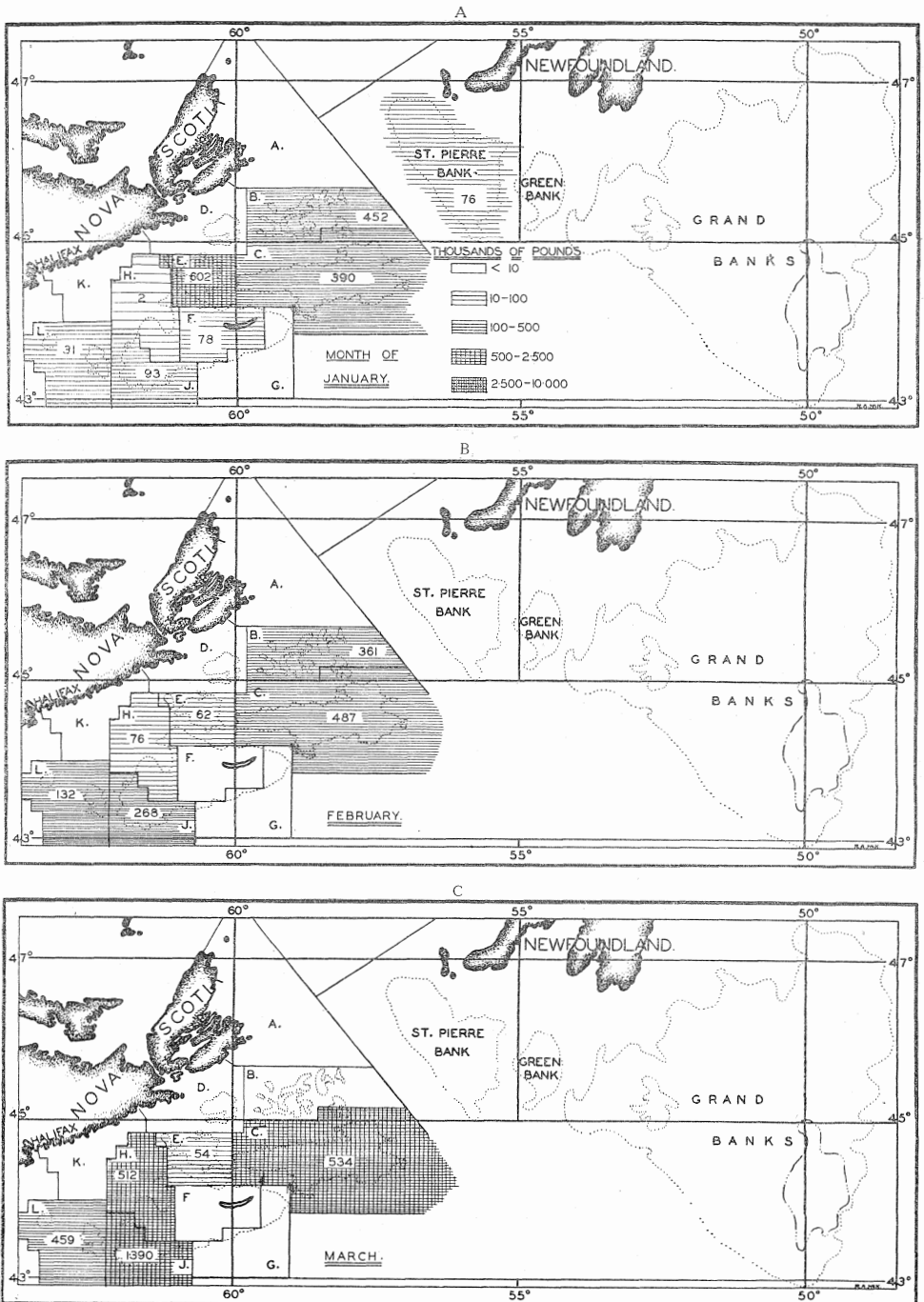


FIGURE 1. "Offshore" cod landings from various regions, averaged for 1938 and 1939. A. January. B. February. C. March.

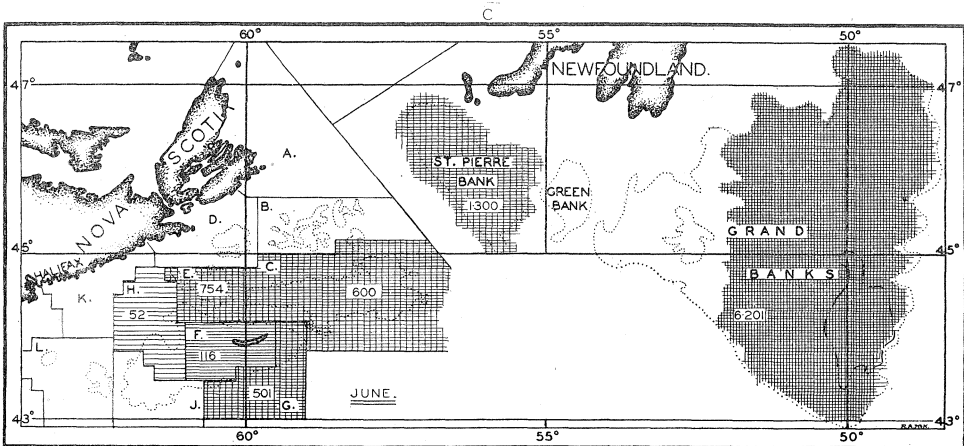
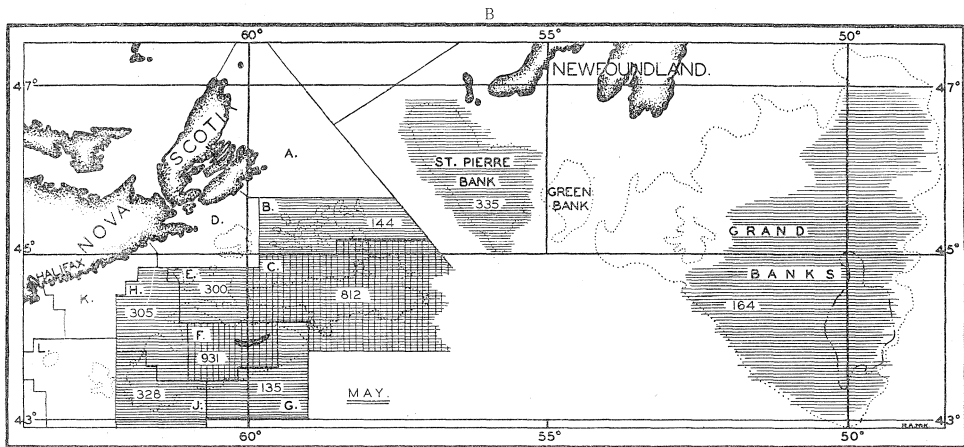
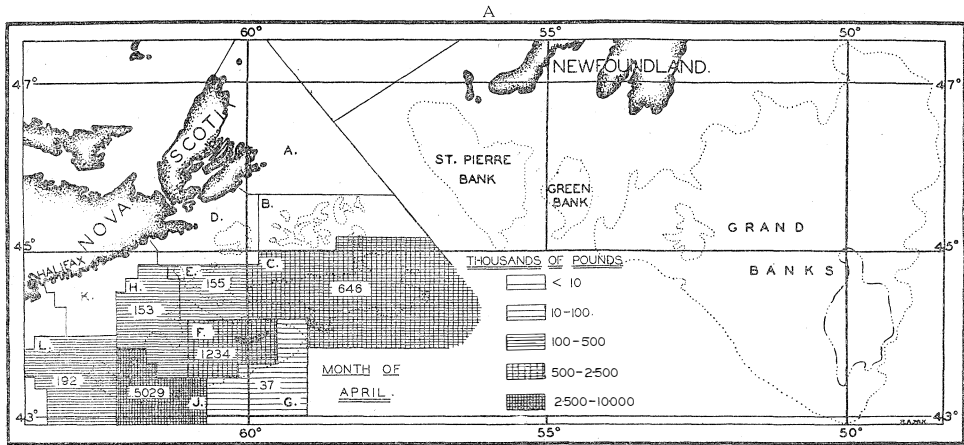


FIGURE 2. "Offshore" cod landings from various regions, averaged for 1938 and 1939. A. April. B. May. C. June.

drawn, none or a very negligible amount was landed. No attempt has been made to indicate within each region either the location of the fishing grounds or their relative contributions to landings from the region. For area XX off southern Newfoundland the banks form the regions and because little, if any, fishing is done on the western part (west of longitude 52°30'W.) of the Grand bank, the landings from this bank are shown on its eastern part only, where fishing is carried on in a great many places.

In January (fig. 1A), the chief fishery was located in sub-areas B, C and E. In February (fig. 1B), there was a more or less pronounced decrease for St. Pierre bank and sub-areas B, E and F, and an increase for sub-areas H, J and L. These changes were accentuated in March (fig. 1C), which gave much greater returns and mainly from H, J and L. Tremendous landings were made in April (fig. 2A) from J, with distinct increases shown in E, F and also C. These very large landings were due to two main causes. First, a peak was reached in the "fresh" fishery in J (large schools of "steak" cod usually frequent this region at this period), and second, the "salt-fishing" fleet, operating chiefly in J (trip began about mid-March), landed its first trip of the year.

The May (fig. 2B) landings were only half those of April, chiefly because the "salt fleet" was out during this month and did not land any quantity of fish. Those they did land came mainly from the Grand banks, since almost directly after the concentration of cod in J disperses late in April this fleet shifts operations to a very great extent to the Grand banks. The "fresh-fishing" fleet spread their operations considerably in May also, making trips to B and St. Pierre bank again, and many of the vessels gave up fishing at that time of year to carry haddock from the traps in Cape Breton to Halifax, Lunenburg, or even the United States.

The June (fig. 2C) landings were high, with the chief amount from the Grand banks. Since very little "fresh" fishing is done by Canadian boats on the Grand banks (table II) the high landings were due to the operations of the "salt fleet"; indeed the yield of "fresh fish" was about the same as in May, with somewhat less of it produced in the western districts and more of it on St. Pierre bank.

During July, August, September and October (figs. 3 and 4), St. Pierre bank supplied a very large percentage of the "fresh" fish. A certain portion of the "salt-fishing" fleet operated in the gulf of St. Lawrence in August and September, that is on the last "salt-fishing" trip, but the main part remained on the Grand banks.

In October (fig. 4A), fewer regions were fished than at any other time of year. During this month and November (fig. 4B), Banquereau and St. Pierre bank were the greatest producers.

THE FISHERY IN THE VARIOUS REGIONS

In L, the most western sub-area, there was significant fishing only during the first four months of the year, reaching a distinct peak in March. Both before and after this month the catch consisted of just over half "market" or medium sized fish and the remainder (with the exception of a few "scrod" or small fish) "steak"

or large cod. The peak catch in March was brought about by a concentration of "steak" fish, which formed a good two-thirds of the fish caught.

In the adjoining sub-area J (the westernmost part of Sable Island bank) the peak was also reached in March and caused similarly by a concentration of "steak" cod. The southwest extremity of this bank ("southwest peak") appears to be the centre of this concentration every year. During January and February about 65 per cent of the catch consisted of "market" cod, but in March 75 per cent of it was "steak". In April, these "steak" cod only made up about 55 per cent of the catch. From then until August, operations were carried on elsewhere, but in August and September the landings from this district, although small, were still slightly more than half "steak". By November and December the proportion of "market" cod had again become about two-thirds. Scrod at no time made up more than 5 per cent of the landings in either L or J.

H is a deep-water sub-area except where it includes some of the northwest part of Sable Island bank. It is in this shallow part, however, that the cod are caught. Here, too, in the early part of the year (January to March inclusive) about two-thirds of the catch consisted of "market" cod, but in April and May 60 to 70 per cent of it was "steak". Even during June and July, it remained slightly over half "steak", but in August and September there was again a preponderance of "market" cod to the extent of 60 per cent of the catch.

Sub-area F has a somewhat sporadic fishery. In January, about 60 per cent of the small landings consisted of "market" cod. In April, the "steak" made up 75 per cent of the catch, but in May 60 per cent of it was again "market" and there were even slightly higher proportions of "market" in June and July. After a period with no fishing, the same proportions were found in September. In December, however, almost 50 per cent of the landings were "steak". In both May and September, the percentage of "scrod" was high (between 7 and 8 per cent).

The fishery in G existed only for a short time in the early summer and two-thirds of it consisted of "market" cod.

The main feature of the fishery on Emerald and Sable Island banks is that it is seasonal with a spring maximum caused by a great concentration of "steak" fish which frequent the "Southwest peak" region for spawning purposes.

In contrast, sub-area E has a cod fishery almost the year round. In the catch from this district the proportion of "market" cod was about 55 per cent in January, from 80 to 90 per cent by March and April, down to about 50 per cent by July, but rose and remained around 66 per cent from then until the end of the year. "Scrod" were always distinctly less than 5 per cent on the landings.

Banquereau or sub-area C also has an almost continuous fishery, although in August and September just before the autumn peak it reaches a very low ebb. From 70 to 75 per cent of the yield consists of "market" cod except during the peak period in October and November when the proportion is only about 55 per cent.

In B there is a fishery in the late fall and early winter (November to January

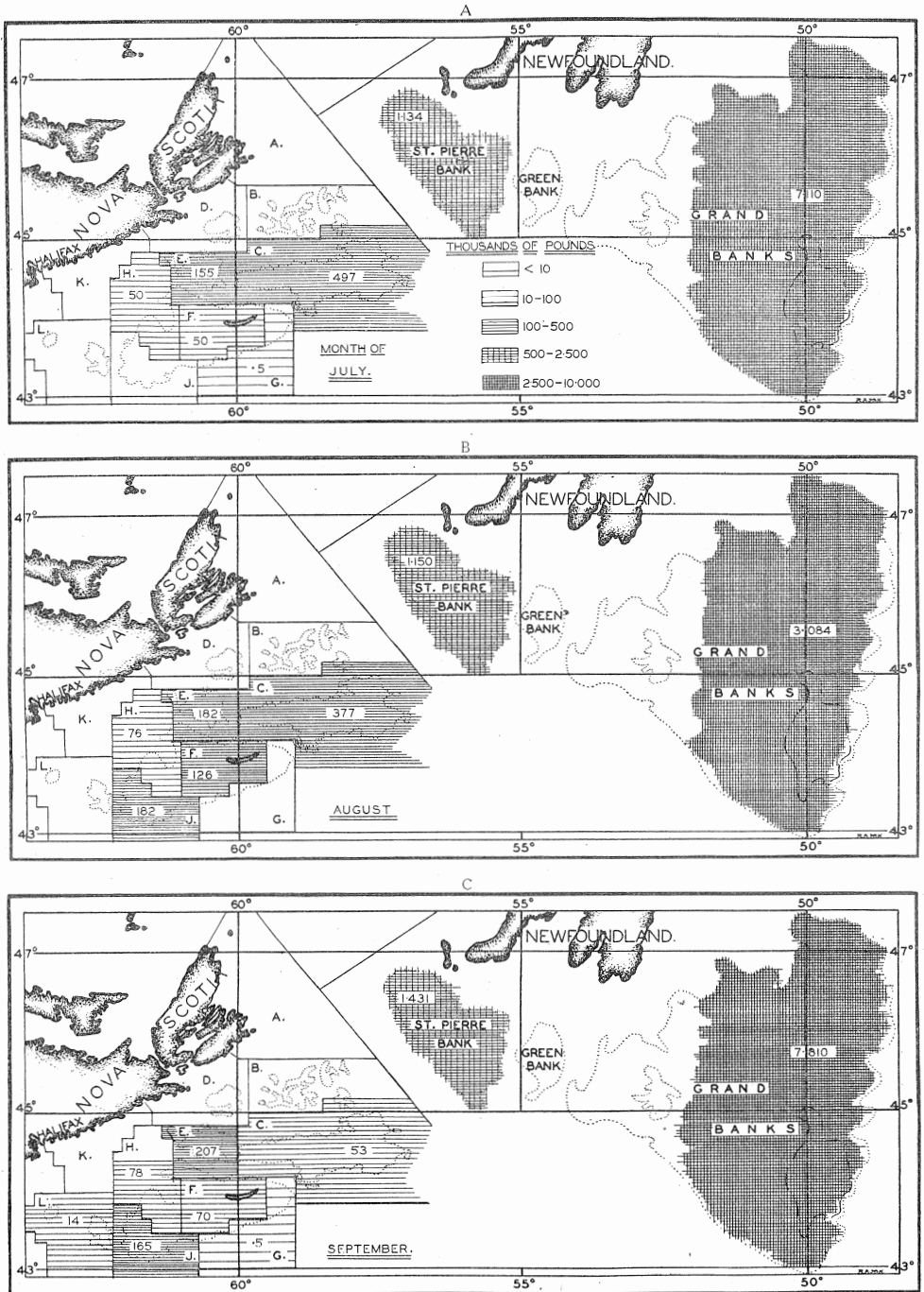


FIGURE 3. "Offshore" cod landings from various regions, averaged for 1938 and 1939. A. July. B. August. C. September.

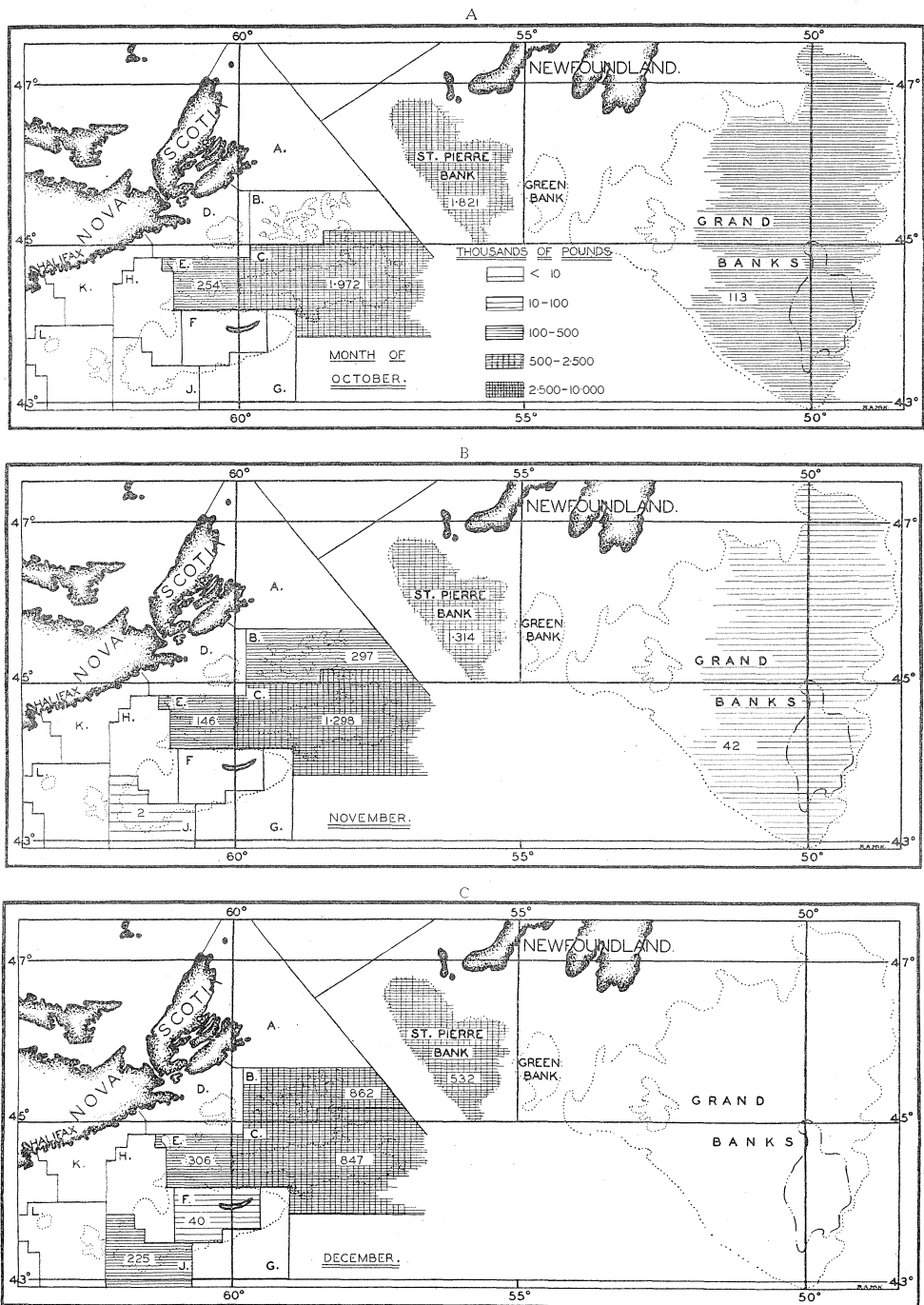


FIGURE 4. "Offshore" cod landings from various regions, averaged for 1938 and 1939. A. October. B. November. C. December.

inclusive) and then again for about a month in the early summer. During both periods, this fishery yields a very high proportion of "market" cod (75 to 85 per cent).

On St. Pierre bank, the fishery lasts from May to December (sometimes into January but not through the winter) and consists almost entirely of "fresh-fishing". The Grand banks fishery on the other hand lasts from May to September inclusive and is almost entirely "salt-fishing". In the landings from St. Pierre bank the proportion of "market" cod remained consistently close to 70 per cent throughout the fishing season. The "salt-fishing" with larger hooks

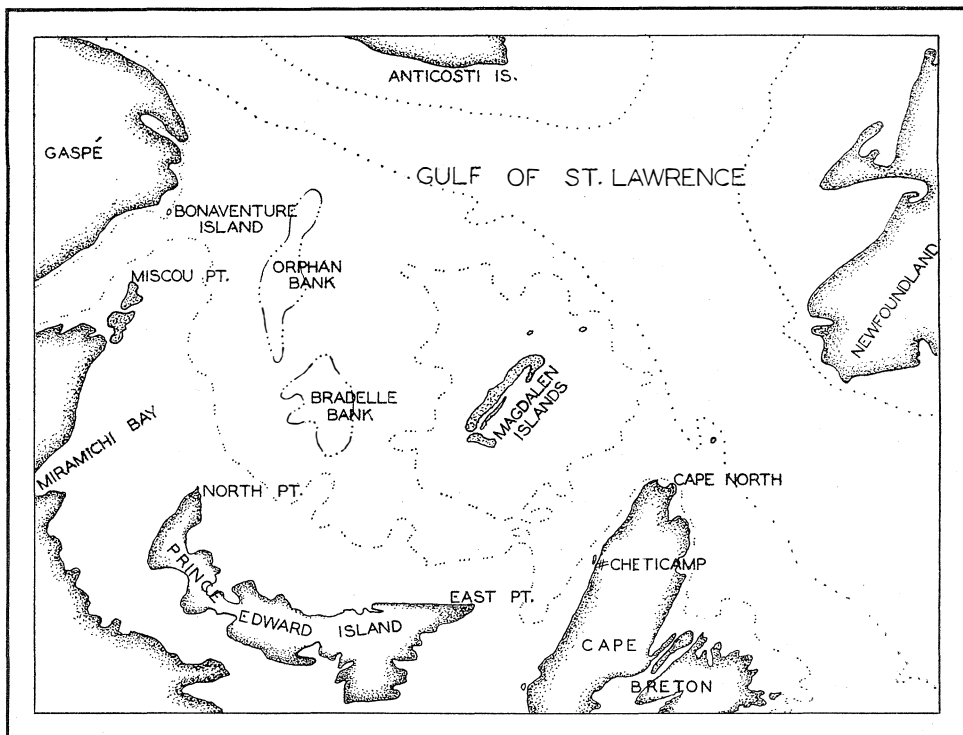


FIGURE 5. The part of the gulf of St. Lawrence fished by the Canadian fleet.

than used in "fresh-fishing" is reported to yield large fish to the amount on the average of about 60 per cent.

Cod from the "Gulf" (of St. Lawrence) are landed from July to November inclusive and especially in August and September (table II). The amounts given cannot be fully relied upon, but are approximately correct. They have not been included in the monthly charts (figs. 1 to 4) but the region from which they have been taken is shown in figure 5. The fishing during July, August and September is carried on almost entirely by the "salt fleet", while that in October and November is done by the "fresh-fishing" fleet. The "salt" fishermen operate mainly

from Miscou bank to North point, P.E.I., to some extent on Bradelle bank and to a slight extent off Bonaventure island and on Orphan bank. The "fresh" fishermen do their fishing in a number of places. In August, some fishing has been done from North point to Miramichi bay. Later, sets are made off East point, and during the last of October and November, as the fish move out of the gulf, operations shift over to Cape Breton island off Cheticamp and ultimately around cape North and down the eastern coast of Cape Breton.

There can well be doubt that the figures for the above mentioned "fresh fish" landings properly represent the "offshore" catches, but they do show that some fishing is done in this region. Some fishing, by the large vessels, is also done in May and June off the eastern Cape Breton coast, but little of it is done at this time farther into the gulf than the immediate vicinity of cape North.

SUMMARY

In summarizing this Canadian offshore cod fishery, it may be said on the one hand that "fresh-fishing" is carried on extensively over the whole of the area considered except the Grand banks, and on the other hand that almost 80 per cent of the "salt-fishing" is done on the Grand banks and the remainder mainly on the western part of Sable Island bank. The Grand banks, which is much the larger region, yielded about twenty-five of the sixty-five million pounds, while St. Pierre bank, Banquereau and western Sable Island banks yielded about eight million pounds each.

The peak month for "fresh fish" landings was April and for "salt fish" landings, September. There was a gradual shift of the "fresh-fishing" operations from off Halifax in mid-winter to St. Pierre bank and Banquereau in the late summer and early autumn. The "salt-fishing" began in March on the western extremity of Sable Island bank. A shift to the Grand banks took place early in the "spring trip". During the latter part of the "salt-fishing" season, which ends by mid-September, some vessels moved from the Grand banks to the southern part of the gulf of St. Lawrence.