

Bureau of Commercial Fisheries
Biological Laboratory
Woods Hole, Mass.

January 2, 1959

Mr. E. C. Borman
Bell Telephone Laboratory
Whippany, New Jersey

Dear Mr. Borman:

In answer to your request for information on the numbers of vessels operating on the Grand Banks, a report has been prepared and is enclosed. It represents our best estimates of the situation, using all of the data that we have available.

A quantitative scale for the chart of vessel activity, Hudson Canyon to Roseway, which you received from us, has been prepared. Those areas designated as "Heavy" have more than three vessels per day per 100 square miles. Areas designated "Moderate" have one or two vessels per day, and those designated "Light" have less than one vessel per day per 100 square miles. It must be remembered that these are grand averages and that the fishing fleet may concentrate on any specific fishing ground at any time, depending on the vagaries of moving groups of fishes. During periods of bad fishing weather, there are apt to be no boats fishing on most of the grounds.

I hope that these data will prove useful to you. We are not in a position at the moment to give you a more detailed breakdown than this.

Sincerely yours,

Woods Hole Laboratory
Manuscript Report Number
58 - 3

Clyde C. Taylor
Acting Laboratory
Director

Enclosures

Office Memorandum • UNITED STATES GOVERNMENT

TO : Laboratory Director
Fishery Biological Laboratory, Woods Hole, Mass.

DATE: December 18, 1958

FROM : R. L. Edwards

SUBJECT: Staff Report: Concentration of fishing vessels on the Grand Banks
(Newfoundland)

Background

Precise information on the distribution of fishing effort on the Grand Banks is not available. The area is fished by about 12 different nations. This report is based largely on statistical information submitted by these nations to the International Commission for the Northwest Atlantic Fisheries (ICNAF Statistical Yearbook, 1956). The analysis of these data reflects in a general way the distribution of vessels by season, statistical area, and vessel-type of operation. Areas of operation and seasonal variations in concentration are fairly constant from year to year. The number of vessels operating from one year to another, however, may vary markedly with such factors as the abundance of fish.

Various statements in this report are based on judgment and limited facts. Zone assignments are based on general knowledge of the operating range of vessels by tonnage category and the species of fish landed. Vessels under 25 gross tons, for example, rarely make trips of more than one day; the range of their operations being confined, therefore, to Zone I (Figure 1).

The data are presented by zone of operation (Tables 1-3) and by vessel tonnages (Tables 5-8). The otter trawlers are broken down into four tonnage groups. Included in the 51-150 ton group are the Danish seiners and the long liners. Their numbers are sufficiently small to have little over-all effect. The data on the dory vessels are presented separately (Table 4).

The data are presented in terms of vessels per day with remarks on the probable area of fishing. For purposes of discussion, Figure 1 attached breaks down the Grand Banks area into three zones. Zone I is that area within which day boats may be presumed to operate. Trip vessels may fish anywhere in Zones I and II. Only the largest vessels, such as those especially interested in catching redfish, may be expected consistently in Zone III.

Data and Remarks

Dory vessels: These vessels are rapidly becoming motorized, and all may be considered so. This is a summer fishery operating from April through October (see Table 4). Most of the fishing takes place during the months of May, June, and July. These vessels carry dories that operate by day independently of the mother vessels. The number of dories carried varies but averages about 75. This fleet ranges widely and probably concentrates its efforts in Zone III.

Small Otter Trawlers (0-25 ton group): These vessels may be considered to be day boats and to operate only within Zone I. The computation of days fished was completely artificial for the group inasmuch as no adequate data exists on this fleet beyond total landings. This fleet plays a major role in Newfoundland's cod fishery. It was assumed that each vessel averages 5 metric tons of fish per trip, and the days at sea were calculated accordingly (see Table 5). This is obviously a group of vessels that operates principally in the summer months. The bulk of these vessels operate off the eastern and northern shores of Newfoundland.

Medium otter trawlers (51-150 ton group): These vessels concentrate their efforts on the St. Pierre Bank (Zone II, P). There is no obvious seasonal pattern in their activities other than a tendency for a slightly increased effort during the late winter and spring (see Table 6).

Large otter trawlers (151-500 ton group): These vessels range widely and spend their effort about equally in Zones II and III. The fleet fishes for redfish, cod, haddock, and flounder. This group includes as many American vessels as any. The winter months apparently discourage this fleet to a slight extent. The early summer months see the largest number of these boats on the banks (see Table 7).

Very large trawlers (over 900 tons): These "factory ships," usually from Spain, Portugal, and France, are usually on the Banks during the spring and fall (see Table 8). These vessels typically make two trips a year.

Conclusions

A large number of small vessels may be anticipated within relatively few miles off the coast of Newfoundland (Zone I). This is particularly the case on the eastern and northern coasts during June, July, and August. The number of these vessels is undoubtedly increased from time to time by the presence of the larger vessels.

The less remote areas of the banks, Zone II, including St. Pierre Banks, are frequented by trip boats and very large otter trawlers. During the spring months, these vessels tend to concentrate around St. Pierre Bank.

The more remote areas of the banks, Zone III, are most heavily fished during the late spring and late summer months. If the data has been synthesized properly, the mid-areas of the banks are less heavily fished than the inshore area or the edge of the shelf itself.

Each of the zones includes many thousands of square miles. A crude estimate is as follows:

Zone I	25,000 sq. miles
Zone II	45,000 sq. miles
Zone III	45,000 sq. miles

Obviously not all of this area is necessarily good fishing ground. The figures are useful at least to determine the average number of vessels per unit of area. In Zone I, the number of vessels would vary from 2.2×10^{-3} per square mile per day to 21.6×10^{-3} per square mile per day. The greatest concentration of small vessels would be one to each 100 to 200 square miles on the average. Of course, this is ignoring the tendency for vessels to congregate and to fish relatively restricted grounds within the total area.

Zones II and III seldom have more than one vessel for each 100 square miles and on the average probably have less than one vessel for each 200 square miles.

Not considered in this report is the time that vessels spend jogging during bad weather nor the time they spend between port and ground and between grounds.

Robert L. Edwards

Enclosure

Table 1. Vessels of all types per day by month and by statistical area within Zone I.

Month/Area	P	L	K	Total
January	5.4	---	---	5.4
February	8.0	---	---	8.0
March	12.7	---	---	12.7
April	20.2	0.1	---	20.3
May	16.1	1.4	0.8	18.3
June	26.3	65.5	105.2	197.0
July	38.7	309.9	192.9	541.5
August	24.4	159.9	88.8	248.7
September	15.5	58.0	46.6	120.1
October	9.9	23.0	28.2	61.1
November	4.5	5.2	5.8	15.5
December	3.9	0.4	---	4.3

Table 2. Vessels of all types per day by month and by statistical area within Zone II.

Month/Area	P	O	L	Total
January	7.8	4.9	---	12.7
February	27.9	3.3	---	31.2
March	38.5	3.4	0.6	42.5
April	28.6	4.6	12.2	45.4
May	7.5	4.9	10.2	22.6
June	6.0	1.7	9.9	17.6
July	5.6	0.1	9.4	15.1
August	4.8	0.1	7.8	12.7
September	9.0	3.5	11.0	23.5
October	10.9	4.1	7.2	22.2
November	6.9	7.8	2.7	17.4
December	2.2	8.5	4.4	15.1

Table 3. Vessels of all types by month and by statistical area, Zone III.

Month/Area	○	N	L	M	Total
January	4.1	2.3	---	---	6.4
February	2.9	10.4	---	0.1	13.4
March	3.3	17.9	0.6	0.1	21.9
April	5.6	25.7	14.5	---	45.8
May	11.8	39.5	30.8	---	82.1
June	3.9	25.0	21.5	---	50.4
July	0.8	27.2	18.4	---	46.4
August	---	37.5	14.2	0.1	51.8
September	3.5	49.2	19.5	---	82.2
October	3.8	36.8	10.1	---	50.7
November	7.2	10.1	3.0	---	20.3
December	7.2	4.1	4.3	---	15.6

Table 5. Vessels per day by month and by statistical area, 0-25 ton otter trawlers, trap vessels and hand liners. Data for those vessels from Maritime Provinces (M) separated from the data for those vessels from Newfoundland (N). These vessels are day vessels and restrict their activities usually to fishing grounds less than 30 miles offshore. Principal catch is cod.

Month/Area	K	L	P(N)	F(M)	Total
January	---	---	4.3	1.1	5.4
February	---	---	6.8	1.2	8.0
March	---	---	12.2	0.5	12.7
April	---	0.1	19.8	0.4	20.2
May	0.8	1.4	14.3	1.8	18.3
June	105.2	65.5	24.9	1.4	197.0
July	192.9	309.9	38.7	---	541.5
August	88.7	159.9	23.4	1.0	273.0
September	46.6	58.0	15.4	0.1	121.0
October	28.2	23.0	9.9	---	61.1
November	5.8	5.2	4.5	---	15.5
December	0.3	0.4	3.9	---	4.6

Table 6. Vessels per day by month and by statistical area, 51-150 ton otter trawlers, line trawlers and Danish seiners. These are medium range vessels that land redfish, cod and haddock. Only Canadian vessels, which may hail from Newfoundland or from the Maritime Provinces.

Month/Area	K	L	O	P	Total
January	---	---	0.8	3.1	3.9
February	---	---	0.4	5.7	6.1
March	---	---	0.2	5.2	5.4
April	---	---	0.2	6.6	6.8
May	---	---	1.4	4.3	5.7
June	---	0.3	0.4	4.7	5.4
July	---	---	---	1.9	1.9
August	0.1	0.2	---	2.3	2.6
September	---	0.8	---	2.8	3.6
October	---	0.3	0.2	3.5	4.0
November	---	---	0.6	2.2	2.8
December	---	---	1.3	1.6	2.9

Table 7. Vessels per day by month and by statistical area, 151-500 ton otter trawlers. These are relatively long ranging vessels from the United States and Canada. Their landings include cod, haddock, flounder and redfish.

Month/Area	K	L	M	N	O	P	Total
January	---	---	---	2.2	8.1	3.8	14.1
February	0.1	---	---	9.9	2.8	14.2	27.0
March	---	1.1	0.1	17.6	3.5	11.0	33.3
April	---	4.0	---	19.9	3.4	8.7	36.0
May	---	9.9	---	26.3	5.9	1.8	43.9
June	---	18.7	---	21.2	2.5	2.2	44.6
July	---	17.3	---	18.6	0.1	2.1	38.1
August	---	6.0	---	30.2	---	1.0	37.2
September	---	1.6	---	37.9	6.6	3.0	49.1
October	1.6	2.1	---	28.0	6.6	2.0	40.3
November	0.2	1.1	---	6.2	8.6	1.0	17.1
December	---	---	---	1.3	12.9	0.5	14.7

Table 8. Vessels per day by month and by statistical area, 901-1800 ton otter trawlers. These are long-ranging vessels, usually Portuguese and Spanish, specializing in cod fishing.

Month/Area	K	L	M	N	O	P	Total
January	---	---	---	0.1	0.1	0.9	1.1
February	---	---	---	0.5	3.0	8.0	11.5
March	---	0.1	---	0.1	1.0	22.3	24.1
April	0.6	20.3	---	0.3	3.3	13.3	37.8
May	---	10.3	---	0.3	1.2	0.2	12.0
June	---	0.3	---	0.7	0.2	---	1.2
July	0.1	1.3	---	6.7	0.1	0.1	8.3
August	0.2	9.2	.04	7.3	0.1	0.3	17.1
September	0.1	18.8	---	11.3	0.4	2.9	33.5
October	4.3	11.6	---	8.8	1.1	4.7	30.5
November	13.4	4.2	---	3.9	5.8	3.7	31.0
December	2.8	8.7	---	2.8	1.5	0.1	15.9

