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Total Polish catches in the ICNAF Area increased from 120,032 tons in 1967 to 187,042 tons in 1968. This was due, primarily, to the increase of fishing effort and also partly to an increase of fishing yield in comparison to the year 1967. Also, fishing vessels, particularly those of a smaller tonnage, operated along with three mother-ships, and thus reduced their loss of time for voyages between fishing grounds and the ports in Poland.

In Subareas 2 and 3, 22 factory trawlers fished mainly for cod, but also for some other species. These vessels made 67 trips to the ICNAF Area compared to 52 trips made by 20 factory trawlers in 1967. Moreover, 12 freezer trawlers, 15 side motor trawlers and 36 steam trawlers operated in Subarea 5, fishing herring. They made a total of 110 trips. The comparative data for the years 1968 and 1967, with respect to major species and their percent relation in the catches, are given in Table 1.

Table 1.

Species	1968		1967	
	tons	percent	tons	percent
Redfish	7,260	3.9	11,897	9.9
Cod	90,941	48.6	57,663	48.1
Flatfish	4,120	2.2	5,514	4.6
Greenland halibut	5,808	3.1	3,321	2.8
Halibut	90	0.1	146	0.1
Haddock	1,296	0.7	.	-
Hake	923	0.5	.	-
Mackerel	10,300	5.5	507	0.4
Herring	64,317	34.4	37,711	31.4
Other species	1,987	1.0	3,273	2.7
Total	187,042	100.0	120,032	100.0

Above data show a decrease of redfish and a marked increase of cod, mackerel and herring in the catches. Since haddock and hake were included under the item "other fish" in 1967, it is not possible to determine a change in their catches in 1968.

Subarea 1

A. Status of the Fisheries

In the period April-June, two factory trawlers were carrying out trial fishing in Divs. 1C, 1D and 1E. In view of the gear damage due to rough bottom and a rather low daily fishing yield (about 15 tons per day), these vessels shifted to the Labrador fishing grounds. The catches and fishing effort in Subarea 1 are given in Table 2.

Table 2.

ICNAF Div	Catch in metric tons		No hours Fishing	No days Fished
	Redfish	Cod		
1C	55	114	100	11
1D	13	724	366	33
1E	-	23	11	1
Total	68	861	477	45

No research studies were carried out in Subarea 1.

Subarea 2

A. Status of the Fisheries

A total of 21 factory trawlers operated in Subarea 2. From July to November, in view of a poor yield obtained from these fishing grounds (1.1 to 1.5 tons per hour trawling), only reconnaissance hauls were made from time to time. Proper fishing operations were carried out from January to June and in December. The catches and fishing effort in Subarea 2 are given in Table 3.

Table 3.

ICNAF Div	Catch in metric tons					No hours Fishing	No Days Fished
	Red-fish	Cod	Green-land halibut	Halibut	Flatfish		
2G	1	925	62	-	-	354	23
2H	10	17,519	1,338	29	9	6,498	576
2J	1,301	51,301	586	35	453	15,643	1,357
Total	1,312	69,745	1,986	64	462	22,495	1,956

In January good abundance of cod was found in Div.2G. The dense ice floes, however, moving along with the Labrador Current impeded fishing operations and compelled the fishing fleet to shift gradually towards southern fishing grounds. Thus, in the first quarter of the year, the catches were made in Div.2H and 2J, along continental slopes from Makkavik Bank via Hamilton Inlet Bank to Sundall. In spite of difficulties among moving ice floes, it was still possible to maintain catches in these fishing grounds and to obtain good results. In February the mean fishing yield obtained from Makkavik Bank by Polish trawlers amounted to 57.0 tons per day (7.3 tons per 1 hour fishing). Catches of cod per day could have been greater, but were limited by the daily processing capacity.

In Div.2J fishing operations were maintained longer than in other divisions. The following daily yields were obtained in particular months: January - 40.4 tons; February - 54.0 tons; March - 41.8 tons; April - 38.8 tons; May - 34.3 tons; June - 27.2 tons and in December - 32.4 tons. These yields were considerably larger than in the same months in the year 1967.

Since Polish trawlers have operated in the same manner in Subarea 2 in the last three years, it is interesting to compare fishing yields calculated per 1 hour trawling. They were as follows: in 1966 - 2.65; in 1967 - 2.45 and in 1968 - 3.27 tons per 1 hour trawling. From these data it appears that the yield in 1968 increased by 33.4% in comparison to 1967 and by 23.4% in comparison to 1966.

B. Special Research Studies

The materials for research studies were collected both aboard commercial fishing vessels and aboard R/V *Wieczno*.

I. Cod

Measurements of cod made in January (the geographical position 56°14'N-57°40'W) showed that fish of mean length 52-54 cm were most numerous in the catches. In February (position 53°30'N-52°40'W) most of captured cod were 42-46 cm. In March (position 54°20'N-53°24'W), larger cod of 48-54 cm were predominant. In October cod of 30-92 cm were caught in Div.2J at depths of 200-300 m. Measurements of 1,270 specimens gave a mean length of 53.9 cm and the most abundant group was fish of 42-65 cm (77.3%). The age of the fish examined was 5-10 years. Both the size and age of fish and the fishing yield point to good resources of cod in Subarea 2. More detailed data are given in ICNAF Res.Doc.69/58 by E. Stanek - "Observations on the stock of cod in the fishing grounds of Labrador (2H and 2J) and Newfoundland (3K) in the years 1966-1968".

II. Redfish

In Div.2J, 1,241 *mentella*-type redfish were measured aboard factory trawler *Aries*. The males were of the length 24-45 cm - mean 32.8 cm. The females were 25-50 cm - mean 36.3 cm. The gonads of females were in resting stage.

III. American plaice

By the middle of October, 785 fish were measured in Div.2J. Their length ranged from 21 cm to 62 cm. The fish of the length 25-36 cm made predominant group in the catches. The mean length of all the fish measured was 34.6 cm. Age readings showed age-groups IX-XX+. The most abundant were age-groups VI to IX, making 54% of the total number of fish examined.

Subarea 3

A. Status of the Fisheries

In Subarea 3, 19 factory trawlers operated in particular months of the year. In view of the high fishing yields obtained from the Labrador region in the first quarter of the year, the cod fishing grounds in Subarea 3 were not exploited intensively. As a matter of fact, a larger number of vessels started their fishing operation for the first time here in April. Thus, the season of best yields which come during the cod spawning period was not fished. Fishing effort and fishing results obtained from Subarea 3 are given in Table 4.

Table 4.

ICNAF Div	Catch in metric tons						No hours fishing	No days fished
	Red-fish	Cod	Green-land halibut	Halibut	Flat-fish	Other fish		
3K	5,590	16,682	3,732	18	3,289	125	21,844	1,518
3L	219	1,004	88	8	337	-	1,522	148
3M	49	71	-	-	1	-	87	8
3N	22	6	-	-	3	-	83	14
Total	5,880	17,763	3,810	26	3,630	125	23,536	1,688

The above table shows that fishing vessels operated mainly in Div.3K, whereas much less fishing was carried out in Div.3L, 3M and 3N.

The fishing in Div.3K was more or less intensive in particular months of the year. Most of fishing days were in June, July, August, October and November - less or considerably less in the other months of the year. The following were mean daily yields in successive months of the year: January - 37.0 tons; February - 61.4 tons; March - 26.3 tons; April - 26.0 tons; May - 21.7 tons; June - 26.5 tons; July - 11.8 tons; August - 19.9 tons; September - 16.9 tons; October - 15.0 tons; November - 17.7 tons and December - 18.6 tons.

No intensive fishing was carried out in Div.3L. The vessels made trips to these grounds only from March to October since the yield there was much lower than in Div.3K. On Flemish Cap (3M) Polish vessels attempted to fish in March, July and November but without good results.

B. Special Research Studies

I. Cod

The materials for studies were collected in Div.3K. Total of 6,156 cod specimens were measured and 403 otoliths read for age. In October the lengths of cod in the fishing grounds at depths of 280-345 m ranged from 28 to 111 cm (mean length 52.3 cm). Most of the fish in the catches (65.2%) were 42-62 cm and age-groups V-IX.

Cod captured in November were 23-77 cm in length. Fish of 45-59 cm and 5 to 8 years old made up 54.2% of the catch. At this time only 15% of cod had gonads in the developing stage (III), whereas 85% were with gonads in the maturing virgin and recovering spent stage (II). At this stage of gonad development they do not yet show the tendency to gather into shoals.

II. Redfish

In October-November 2,632 redfish (type *mentella*) were measured and otoliths taken from 400 specimens in Div.3K. The length of males ranged 22-44 cm - mean 34.9 cm; the length of females ranged 23-51 cm and their mean length was 37.5 cm. Gonads were in the recovering stage (II).

In February, 255 *mentella* redbfish from Div.30 were measured. Lengths ranged between 11 and 41 cm - mean 30 cm. The females differed only slightly in length from the males.

According to the observations based on fishing yield and length composition of the catch it appears that the stock of redbfish was rather poor and it is hardly possible to expect good fishing results in the immediate future.

III. American plaice

Flatfish were sampled in Div.3P aboard R/V *Wiccano* and in Div.3K and 3L aboard commercial fishing vessels.

In February 944 fish were measured in Div.3P. The range of their length was between 12 and 55 cm with mean length of 30.3 cm. The most abundant was the length-class 24-34 cm. From the readings of 174 otoliths it appeared that age-groups V to XIV were represented in the stock and fish 6 to 9 years old made up 84.6% of the catch.

In October, 4,130 specimens of American plaice were measured in Div.3K with the range of their length between 20-63 cm and mean length 40.4 cm. The length-class 35-45 cm was predominant. The age-groups IV to XX+ were determined from the reading of 600 otoliths. Fish 7 to 12 years old made up 51% of the catch.

Also in October, but in Div.3L, 1,003 fish were measured. Their lengths ranged between 21-61 cm; their mean length was 36.6 cm. The fish of the length 30-40 cm were the predominant group. From the readings of 201 otoliths, the occurrence of fish in age-groups V to XX+ was determined. Fish 6 to 12 years comprised 75% of the catch.

IV. Witch

A total of 2,611 fish from the autumn catches made in Div.3K were measured. Their length ranged between 31-66 cm; their mean length was 49.1 cm. The most numerous were fish of the length 45-53 cm. The readings of 300 otoliths showed that the catches were made up of age-groups IV-XX+. Fish 12 to 16 years old made up 56.3% of the catch.

V. Greenland halibut

Polish catches of this species increased and fishing yield was better than in 1967. The measurements of 1,937 specimens showed that the length of fish caught ranged between 25 and 93 cm and their mean length was 50.7 cm.

C. Hydrographic Research

From 21 to 28 February, hydrographic section (26 stations) was made, starting at the eastern slope of the Great Newfoundland Bank (45°51'N-47°43'W) through the western slope of Green Bank (45°03'N-54°31'W) up to the southwest slope of St. Pierre Bank (45°43'N-56°29'W). At the eastern edge of the Great Bank, the surface temperatures were slightly above 0°C. The temperature rose with increasing depth reaching 4.44°C at the depth of 550 m. The temperatures below 0°C were noted from the middle part of the Great Bank towards Green Bank and reaching a depth of 75 m. Over Green Banks and St. Pierre Bank, the temperatures in the surface layers remained above 0°C (0.71, 1.47, 0.56°C). Here also the rise of temperature was noted along with increasing depth. At the position 45°03'N-54°31'W, the highest temperature, 8.09°C, was noted at a depth of 200 m.

The surface salinity, which in the eastern part of the Great Newfoundland Bank was 32.70‰, dropped to 31.83‰ over Green Bank and again rose to 32.20‰ over St. Pierre Bank. Bottom salinities for these regions were 34.47‰, 32.83‰, 32.01‰ respectively.

On 26 stations the oxygen content at the surface oscillated within 7.26-8.34 ml/liter O₂, with mean value 7.66 ml/liter O₂. With the increase in depth, a gradual decrease of oxygen content was noted. Only in a few places was the oxygen content below 5 ml/liter O₂. It thus appears that oxygen content in the area investigated was rather high.

Phosphate content fluctuated considerably. At the surface, it was 20-30 P₂O₅ milligrams per 1 m³, while at the bottom it was 25-60 mg/1 m³. The mean P₂O₅ content at the bottom was 38 mg/1 m³.

Subarea 4

A. Status of the Fisheries

Catches in Subarea 4 were poor. Only in March, June and July a few vessels searched for good fish concentrations. The reconnaissance trips were conducted by one large freezer-trawler, one side motor-trawler and one steam side trawler. The results of the search and the fishing effort are given in Table 5.

Table 5.

ICNAF Div.	Catch in metric tons				No. hours fishing	No. days fished
	Cod	Herring	Mackerel	Other fish		
<u>Large freezer-trawler</u>						
4W	12	369	86	211	297	38
4X	-	25	-	187	42	3
<u>Side motor trawler</u>						
4W	16	122	12	14	51	12
4X	-	49	-	-	32	3
<u>Steam side trawler</u>						
4X	-	172	-	-	204	28
Total	28	737	98	412	626	84

The freezer trawler obtained an average of 2.63 tons per 1 hour trawling or 21.7 tons per day. However, almost 45% of the catch was the so-called "other fish" which are of little interest to fishermen. The motor trawler obtained an average of 2.57 tons per 1 hour trawling (14.2 tons per day) and the steam trawler, 0.8 ton per 1 hour trawling (6 tons per day). At the same time vessels catching herring on Georges Bank obtained much better results. These circumstances made fishing vessels leave Subarea 4 and shift to better fishing grounds.

B. Special Research Studies

The research studies in Subarea 4 were carried out on herring aboard the vessel "Walpusza" and on demersal fish aboard the vessel "Wieczno".

I. Herring

The best conditions for bottom trawl catches were found in June in the region of Emerald Bank. Temperatures and trawl catches seem to show that at that period herring remain at the sea bed in temperatures ranging from 5.5° to 7.5°C. Smaller herring (up to age-group VI inclusive) occurred at depths of 90-100 m, and the yield was 1-2.5 tons per 1 hour trawling. Older fish occurred at greater depth where they were less densely concentrated and yielded lower catch per unit of fishing effort.

A total of 4,495 herring were measured. Their length ranged 27-39 cm. At 90-100 m fish of 29.5-30.0 cm were most abundant. In the deeper places - being less numerous - occurred herring of the mean length 34.0 - 34.5 cm. The readings of otoliths showed that herring on Emerald Bank were 4 to 11 years old. Older fish were seldom encountered. Most abundant in the stock examined were the year-class 1963, 41%, and the year-class 1960, 17.1%. In comparison to the herring stock of Georges Bank, the stock from the Subarea 4 consisted of elder year-classes, which points to its lower rate of mortality.

II. Haddock

By the middle of March the research vessel "Wieczno" encountered large concentrations of this species in the central part of Emerald Bank. With a mean fishing yield of 750 kg per 1 hour trawling, haddock comprised 90% of the catch. In the other fishing grounds of Subarea 4, this species was found in rather small quantities. During March, 6,685 fish were measured in various fishing grounds. Their length ranged between 16 to 80 cm.; mean length being 49.7 cm. The length-class 40-55 cm. was predominant. From the reading of 455 otoliths, age-groups I to XI were noted. In spite of the fact that age-group IV was the most numerous in the sample, it seemed to be poor. Of course, it is subject to high fishing mortality. With poor recruitment of younger age-groups, a decrease in fishing yield should be expected.

III. Redfish

Only once and only over the eastern slopes of the Sable Bank was a concentration of mentella-type redfish encountered. A yield of 750 kg per 1 hour trawling was obtained and 693 fish were measured. Lengths ranged from 26 to 39 cm.; mean length - 34.5 cm. The stock of redfish in the Subarea 4 is rather poor.

IV. American Plaice

Measurements of 640 fish from Banquereau were made. Lengths ranged between 14 to 48 cm. with a mean length of 29.5 cm. The most lengths found were 25-35 cm. A total of 100 otoliths were read for age. The age groups determined were IV-X. Most of the fish were age-groups V-VII, which made up 88% of the sample. In March the vessel "Wieczno" obtained a yield of 50 to 250 kg per 1 hour trawling.

In the region of Sable Bank where larger fish occurred, 558 specimens were measured. Their length ranged from 19 to 62 cm.; the mean length was 34.2 cm. Most of the fish were 28 to 36 cm. In the sample, age-groups V-XIV were found. Fish 6 to 9 years old made up 82.5%. The vessel "Wieczno" obtained here 375 kg of American plaice per 1 hour trawling.

V. Yellowtail

In the region of Sable Bank this species occurred in considerably smaller quantities than American plaice. Actually it was only a by-catch of the 568 specimens measured, lengths ranged between 20 and 49 cm. with a mean length of 33.7 cm. According to otoliths readings they were in age-groups V-XI. Yellowtail of the length 30-36 cm - 6 to 8 year old - made up 87.5% of the sample.

C. Hydrographic Research

Hydrographic studies were carried out from 1 - 19 March in the area from Banquereau Bank to Emerald Bank. The prevailing temperatures of the surface layers were next to 0°C, while on Banquereau Bank, Middle Bank and off the coast of Nova Scotia they were below zero (Middle Bank: -1.22°C). In the first half of March, surface temperatures on Sable Bank were about 1°C and on Emerald Bank 2-3°C. In the region of Banquereau and Middle Bank, the temperature at the bottom remained below zero; -0.37 and -0.20°C respectively. In general, the temperatures increased with increasing depth, reaching a maximum at from 140 to 180 m (above 9°C). On Sable Bank, the bottom temperatures were 1-2°C and on Emerald Bank almost 6°C. Along the shelf of Nova Scotia from east to west there was a rise in temperatures noted both at the surface and at the bottom.

Surface salinities ranged between 31 to 32‰. Greater differences in salinities were observed in bottom layers. The lowest salinity was noted on Sable Bank (31.67‰). On Banquereau it was about 32‰ and on the Emerald Bank 32.88‰.

Oxygen content in the surface layers all over this area amounted to 7-8 ml/liter O₂. First at the depth greater than 80 m. the oxygen content decreased, dropping down to 5 ml/liter O₂, at the depth of 180 m. The lowest oxygen content was noted at the position 44° 66'N - 62° 50'W, at which it was 3.81 ml/liter O₂.

The phosphates in the surface layers amounted to 25-30 mg P₂O₅ per 1 m³. At the bottom the phosphate content was higher. Content was highest at the edge of Nova Scotia shelf (60-70 mg P₂O₅ per 1 m³).

In the depression between Emerald Bank and Sable Bank considerable concentration of haddock was observed. It occurred in a temperature of about 6°C, salinity 32.5 - 33.5 ‰ and oxygen content 5-6 ml per 1 liter O₂.

Subarea 5

A. Status of the Fisheries

In this Subarea 4 factory-tractlers, 8 large stern freezer-tractlers, 4 smaller stern freezer-tractlers, 15 side motor tractlers and 36 steam side tractlers took part in the fishing. The catch and the fishing effort in Subarea 5 are given in Table 6.

Table 6

ICNAF Div.	Catch in metric tons							No. hours fishing	No. days fished
	Cod	Haddock	Hake	Flat-fish	Herring	Mack-erel	Other fish		
5Z	<u>Factory-tractlers</u>								
	958	-	-	7	5,457	-	2	876	153
	<u>Large freezer-tractlers</u>								
	854	534	515	-	8,978	5,899	766	5,653	689
	<u>Smaller freezer-tractlers</u>								
	129	239	92	23	2,920	756	238	3,212	261
	<u>Side motor tractlers</u>								
575	405	281	-	18,840	2,917	351	9,803	1 745	
<u>Steam side tractlers</u>									
28	108	35	-	27,303	588	227	24,530	2,789	
Total	2,544	1,286	923	30	63,498	10,160	1,584	44,074	5,637

On Georges Bank herring catches were made from April until December inclusive with varying intensity. From January to April, fishing intensity was very low. The main object of the Polish fisheries in this fishing ground is herring and partly mackerel - the fishermen consider other species here as a by-catch. Hence the fishing operations are principally adapted to the season of herring catches.

Factory-tractlers were at first in search of bottom fish. They caught herring partly in August and mainly in September. Fishing yield obtained by them in these months was respectively 1.8 and 8.3 tons per 1 hour trawling, whereas per day they obtained 22.6 and 43.5 tons. The high yield per 1 hour trawling, with rather low yield per day shows that in September these vessel could not take full advantage of fishing possibilities because of their limited freezing capacity.

Large freezer-trawlers fished from April to December, obtaining the following yields in successive months of the fishing period: April - 36.2; May - 22.0; June - 22.2; July - 20.9; August - 33.3; September - 33.6; October - 21.7; November - 16.5 and December - 23.4 tons per day.

Small stern freezer-trawlers also fished from February to November, but their yields were not evenly distributed through the whole period: February - 25.8; March - 21.6; April - 25.4; May - 15.0; June - 16.4; July - 5.6; August - 15.7; September - 16.2; October - 9.5 and November - 16.4 tons per day. These data show that the vessels of this type had rather poor yields during the peak season for herring.

Side motor trawlers fished from April to December, obtaining the following yields: April - 17.2; May - 13.3; June - 12.9; July - 17.0; August - 12.2; September - 18.1; October - 7.6; November - 10.2 and December - 9.4 tons per day.

Steam side trawlers fished from March to November, obtaining the following yields: March - 9.5; April - 10.5; May - 8.1; June - 9.0; July - 9.7; August - 8; September - 19.1; October - 5.2 and November - 7.8 tons per day.

On the whole factory-trawlers, fishing only in the peak season, obtained better yields in 1968 than in 1967, whereas stern freezer-trawlers had lower fishing yields in the peak season. Better yields were obtained by the steam trawlers. A comparison of the yields for 1968 and 1967 is given in Table 7.

Table 7.

Type of vessel	Yield in metric tons per 1 hour trawling	
	1968	1967
Factory ship	7.33	3.29
Large freezer-trawler	3.10	3.11
Small freezer-trawler	1.37	2.65
Side motor trawler	2.38	2.86
Side steam trawler	1.15	1.00

In 1968 Polish vessels operated almost exclusively in 5Ze. Only 4.0% of fish were caught in Div. 5Zw.

B. Special Research Studies

Research studies in the Subarea 5 were conducted aboard research vessel "Wieczno" and the scouting vessel "Walpusza". Herring were measured also aboard commercial fishing vessels.

I Herring

A total of 22,042 herring were measured for the various fishing grounds. Their length ranged from 22 to 36 cm. The most abundant group in the catches comprised herring of the length 30-33 cm.

A total of 2,150 otoliths were read for age studies. These readings showed that age-groups III to XI (year-classes 1965-1959) occurred in the catches. The most abundant was the 1960 year-class (36.8%). The next in abundance was the 1963 year-class (19.6%) and the third the 1961 year-class (19.5%). The 1962 year-class was much less abundant (11.2%). Thus the exploited stock consisted of rather older year-classes.

The results of scouting for younger fish were rather poor. Only in the Gulf of Maine was a large concentration of herring of the age-group III (the 1965 year-class) encountered. It made up 8% of the total mass of herring caught here. On other fishing grounds, the proportion of this year-class in the catches was only 0.1 to 2%. The 1965 year-class made up only 1.3% of the total material investigated. Hence, it seems the abundance of this year-class will be rather low.

Some other observations and the more detailed data on herring from the Subarea 5 are found in ICNAF Res. Doc. 69/57 by F. Chrzan and B. Draganik - "The results of studies on herring from the region of Nova Scotia, Georges Bank and the Statistical Subarea 6.

II Haddock

Haddock was not the object of interest in Polish fisheries. Hence the studies of this species were carried out on a rather small scale.

A total of 2,583 haddock from Georges Bank were measured in the second half of March. The length of the fish were in the range from 12 to 79 cm.; their mean length was 47.4 cm. The length frequency distribution had two peaks relating to fish lengths of 37-41 cm. and 48-57 cm.

Age studies comprised readings of 300 otoliths and determination of age-groups I-VII. Most of fish were of the age-group IV (47.4%). Much less numerous were fish 2 and 3 years old.

This points to poor recruitment into the commercial stock. The 1966 year-class which should strengthen the commercial stock of haddock in 1970, does not seem to be abundant. In these circumstances further decrease of haddock catches may be expected.

C. Hydrographic Research

Hydrographic studies were carried out from 5 to 20 September and again from 13 to 28 October.

In September the investigations were carried out in the northern and southwestern regions of Georges Bank. Surface temperature in the northern part (above 41°00'N) was 13.22°C while in the southern part (position 40°34'N - 67°00'W) it was 24.33°C. The temperature of bottom layers was 3.75°C (at the position 41°33'N - 67°00'W). At the bottom of the shallowest parts of Georges Bank temperatures of 10-14°C were recorded.

Surface salinities ranged from 32.36 ‰ to 35.48 ‰. Over the major part of the Bank area the surface salinities were from 32.5 ‰ to 33.00 ‰. Below 100 m the salinity was in general considerably higher than in the surface layers.

In October the observations were carried out in the southeastern and eastern parts of Georges Bank. Surface temperatures, depending on geographical position, remained within the range from 12.25°C to 20.00°C (over the southeastern slope of Georges Bank). At the bottom, temperatures varied from 6.60°C to 14.16°C.

Surface salinities ranged from 31.08 ‰ (at the position 41°45'N - 65°43'W) to 34.65 ‰ (at the position 41°10'N - 65°19'W).

In the shallower parts of Georges Bank, down to 80 m, no very great variation in the salinities was noted. At greater depths, the salinities were higher and in some places reached 35 ‰.

D. Invertebrates

Observations were made on the occurrences of lobsters, shrimps and squids.

In autumn 123 lobsters of an average weight 2,060 g were caught over the southern slopes of Georges Bank. Of this number there were 72 females, of which 13 were bearing eggs.

Shrimps were captured over the southern slope of Georges Bank at a depth of 90 to 180 m. The yield obtained was on the average 500 kg. per 1 hour trawling. Mainly Pandalus borealis was caught, while Pandalus montagui made up a by-catch of 5-10%. An average number of 120 shrimps was found in 1 kg. sample.

Squids were caught at the positions 39°37'N - 39°45'N and 72°02'W. The catches were made up entirely of the species Loligo pealei. From two hauls 5.5 tons of squids were landed. Mean length of the mantle of these cephalopods ranged from 15 to 20 cm.