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French Research Report 1972.

A. France (Saint Pierre and Miquelon)

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Subareas 3 and 4 (Saint-Pierre and Miquelon).

In 1972, a total of 4,842 metric tons of various fishes were landed in the Convention Area by trawlers and dories of St Pierre et Miquelon. It must be remembered that in 1970 the total catches were as high as 6,784 metric tons - in 1971 5,528 metric tons, the maximum landing having been obtained in the territory during 1961 - a total of 13,575 tons (of which 4,653 were Haddock).

While the 1970 and 1971 catches represent 49.97 % and 40 % respectively of the 1961 catches, the figures for 1972 correspond to only 35.66 % of the landings of that same year.

This collapse in the size of landings may be due to the very unfavourable meteorological conditions in the archipelago during the last three months of the year - to the laying up of a trawler for one trimester, but also to the growing scarcity of the Cod and Haddock in the 3 Ps subdivision of ICNAF where the small trawlers of the territory do most of their work.

Table 1 gives details of the 1972 catches, while table 2 resumes the evolution of the tonnage from 1960 to 1969 inclusive.

Subarea 3.

A - Status of the Fisheries.

As shown in Table 1, Cod is fished mostly in subdivision 3 Ps in winter (December to January) and in May on the St Pierre and Burgeo banks. 446 tons originated in 3 Ps and 226 in 4 Vs (in March) which shows that the fishery moved southwards at this time of year.

The small scale fishing, for which motorized dories (vessels equipped with fish loops) and simple hooks and lines are used, is strictly limited to the coastal waters and the shoals situated close to the processing plants. The fishing areas are all contained in the 3 Ps region. The dories belonging to the Miquelon fleet are at sea from the end of May to the beginning of October ; while those of St Pierre work from Mid-May to Mid-November. The best results for cod were obtained in June and July. The Mackerel was caught in August and only by the St Pierre dories, since an opening had been found for this species. Table 3 resumes the state of these landings.

In 1972, the catches in Miquelon consisted solely of cod while the St Pierre boats took 25 tons of Mackerel (Scomber scombrus) and 11 tons of American Plaice (Hippoglossoides pl. platesaoides) in addition.

A brief experiment was tried from May to October with a long liner using either trawl-lines or gill-nets. The experiment did not have the expected results, and will be undertaken again in 1973.

Subarea 3 L, rich in American Plaice, was again worked very little this year (100 metric tons in April-June). Subarea 3 N provided 192 tons in May, June, September and October, but 3 Ps rendered 372, spread over the whole year.

In any event, the total amount of American plaice caught in subarea 3 is 707 tons, while in 1971 it was 1,143 tons.

Haddock was caught only on the slopes of the St Pierre bank (3 Ps). As in 1971, the total for December to January is very weak, 52 tons, as compared to 1,158 tons in 1970.

Redfish is taken on the St Pierre and Burgeo bank slopes in May, July, August, September ; but while the total catches reached 2,631 tons in 1969, 1,627 tons in 1970 and more or less the same level in 1971(1,747 tons), in 1972 the total fell to 675 tons.

Traditional fishing of the Territory in Div. 3 Ps.

As described above, the dories landed 990 metric tons of cod as compared to 1,306 tons in 1970 and 1,651 tons in 1971. The growing scarcity of cod in the fishing areas exploited by the inshore fishermen of Miquelon is one of the causes which might explain this reduction in the landings.

Subarea 4.

A - Status of the Fisheries.

Table 1 shows that there was practically no fishing in subarea 4 R during 1972, although the metropolitan High Seas trawlers worked there from January to March in 1971 (24,363 tons of cod) and in 1972 (10,600 tons).

The interior of the Gulf, subareas 4 R and 4 T, was not exploited for Redfish.

On the other hand, subareas 4 Vn (in winter) and particularly 4 Vs (in February-March) provided close to 300 metric tons of cod. 120 tons of American Plaice were taken in 4 Vs in March and in 4 Vn in March and October on the plateaux while approximately 110 tons of Redfish were caught on the slopes of the same banks. The best yields for this species were obtained in 4 Vs in March and in 4 Vn in February.

B - Special Research Studies.

Observations were made in ICNAF subareas 3 and 4 on board the R/V CRYOS throughout the year. Besides, from August 20th to September 29th, the vessel participated in the work of the International Tagging Experiment in Western Greenland.

Lastly, in accordance with the "Coopération Franco-Québécoise" (France-Quebec Cooperation), she carried out a hydrographic and prospecting study of Cod, Capelin, Redfish and Deep Sea Prawn in the Bras de Belle-Isle during June and July 1972.

I - Environmental study.

a) Hydrography and Plankton.

The hydrographic research carried out during the various cruises of the R/V CRYOS, was limited, as in 1971, to a definition of the marine environment in which the various species of fish investigated were to be found.

Cruise in the "Basse Côte Nord" of Quebec

The first part of the survey in June was devoted to a detailed hydrographic study of the Bras de Belle Isle in order to define the temperature sectors more favourable to the presence of fish. Perpendicular to the main axis of the Bras de Belle Isle - from Pointe Amour (P.Q) to Flowers Cove (Nfld) on one hand and from Ile Ste Marie (P.Q) to Lake Mountain (Nfld) on the other - seven hydrographic sections were set up with 64 stations made from June 17th to 20th. It is interesting to note that this was the first time that a hydrographic study was undertaken in this region at this time of year. The material used was a B T S (temperature, salinity and depth chain) a rather delicate device requiring frequent adjustments, and four bathythermographs. At each station a B T S and a bathythermograph were allowed to run out.

The hydrographic data obtained are being dealt with by the Research Service, "Direction des Pêches Maritimes" at Quebec, but a Preliminary Report of the Cruise of the R/V CRYOS in June, July 1972 was distributed in January 1973.

The maps showing the isotherms were charted on board and the projections drawn up based on this hydrographic chart.

Tagging Cruise for Atlantic Salmon.

At each gill-net fishing station, a chain of reversing bottles, equipped with protected Yoshino thermometers, was sent to standard depths, as far as 60 m, - 0 - 10 - 20 - 30 - 50 and 60. In addition to the temperature readings needed for the study of the relationships between the catches and the environmental conditions, samples of sea water were taken for the National Museum of Natural History in Paris. These samples were taken at different depths in order to isolate the ectocrin substances, the pterins and the flavins in the water. Samples of sea water were also collected in zones where salmon was either present, absent or abundant ; these were frozen for later study in the Oceanographical Institute Laboratories of Monaco.

Measurements of the clarity of the sea water were made at each station using a Secchi disc wherever the atmospheric conditions permitted (12 stations) ; a vertical sampling of plankton was made using a Hensen net between a depth of 100 meters and the surface. After each vertical catch, a horizontal tow was also effected at the surface. The data collected during the Greenland cruise will be studied outside the "Institut des Pêches Maritimes".

II - Exploitation and stocks of commercial fish.

A. Study of the bottom fish.

Two surveys were made, one in winter, the other in spring, on the St Pierre and Burgeo banks, to study the availability of commercial benthic fish in the **IGNAF** subdivisions surrounding St Pierre.

a) The February campaign of 1972, the institute's first winter cruise after a long break in this region was the third of its kind and followed-up the summer (July 1971) and autumn (November 1971) campaigns already devoted to the study of benthic fish. The main aim of these cruises was to make more precise our knowledge of the biology of the principal commercial species, Cod, Haddock, Flounders (mainly the American Plaice) and Redfish, according to season and thus to environmental conditions.

The hauls were made in sections already established in fixed positions, in accordance with the bathymetric strata recommended by ICNAF in such a way as to enable a valid comparison of data to be made through all four seasons. At first, four hauls per day were planned in each section so that the stomach sampling could be done at twilight. But because of several days spent hove to during strong winds (60 knots) the survey had to include 6 hauls per day in favourable weather to make up for lost time.

After each haul, the fish was weighed by species, in order to calculate the yield. 37 trawl hauls of half an hour's duration yielded a total of 17,822 kilos of various fish, of which 7,304 were of commercial value, not including the 7,834 kilos of Squalus acanthias, 872 kilos of Argentina silus, 1,579 kilos of Cyclopterus lumpus, 40 kilos of Anarhichadidae, 193 kilos of Hemitripterus americanus which have no sale-value in St Pierre.

The most plentiful species were Skates (Raja sp.) 570 kilos, Cod (Gadus m. morhua) 2,154 kilos, Red Hake or White Hake (Urophycis sp.) 695 kilos, Redfish (Sebastes marinus mentella) 2,379 kilos, Flounders : American Plaice (Hippoglossoides pl. platessoides) 371 kilos, Witch (Glyptocephalus cynoglossus) 792 kilos, etc... Measurements were made of all commercial species caught, either the whole catch or else a random sample when the catch was too large.

In 3 Ps, the Cod was sexed ; 763 kilos of males, i.e 543 individuals, were measured ; the sizes ranged from 13 to 116 centimeters, with a peak at 25 cm and another at 53 cm. 773 kilos of females, i.e 530 individuals were studied ; the sizes were between 16 and 130 cm, with peaks at 25 cm and 49 cm (see graph 1).

Again in 3 Ps, the Redfish caught with a Lofoten trawl were measured. 1,073 kilos out of 2,379 kilos were measured and sexed - 1,651 males accounted for 393.5 kilos, compared to 679.5 kilos for the 1,734 females.

The sizes of the males ranged from 8 to 47 centimeters, with three modes : 16 - 20.5 and 32 cm ; the females from 10 to 46 cm with three modes : 16 - 20 and 34 cm. (Fig. 2)

The otoliths were removed from the Cod, Redfish and American Plaice. The sexual stages were also studied for over 1,000 specimens of American Plaice, while the stomachs were removed from the Redfish and American Plaice.

Radio contact was established with the St Pierre trawlers and the Metropolitan French High Seas vessels. Most of the latter were blocked in the ice in the St Lawrence, - which shows the severity of the winter

of 1971-1972. Favourable SE winds enabled them to get out and they began fishing on the boundaries of the ice-float off the Scatarie and St Anne's banks where they made several good hauls of Cod.

Observations on the fishing.

The R/V CRYOS was only able to work on the eastern side of the Laurentien channel : the St Pierre and Burgeo banks. The yields from all hauls carried out on the plateaux of the banks were limited in size. The temperatures were low, -1° C to $+0.2^{\circ}$ C, and the catches consisted mainly of Cyclopterus lumpus and Cottidae : Hemitripterus americanus and Myoxocephalus octodecemspinosus. The small St Pierre trawlers made the same findings as the R/V CRYOS during the same period and left the plateaux for other areas.

The yields obtained on the slopes, although in general a lot smaller than those of November 1971 in the same geographical locations, were nevertheless greater than the yields mentioned above. Cod reached its maximum yield (306 kilos) on the NE slope of the Burgeo bank, - at 140 meters and a temperature of 2.37° C -, Redfish on the SW slope of the St Pierre bank (587 kilos per 1/2 hour), - at 365 meters and temperature 5.33° C -, American Plaice : 170 kilos per 1/2 hour to the south of the St Pierre bank at a depth of 30 meters. Witch : 431 kilos per 1/2 hour to the south of the St Pierre bank, at 275 meters and 7.17° C.

It must be noted that Haddock, Melanogrammus aeglefinus, was almost completely absent (148 kilos for the whole campaign), although February and March are usually the best months for catching this species on the western slopes of the St Pierre bank.

This cruise which took place in winter at a time when the fishing effort is greatest in the southern part of Newfoundland, led us to predict good yields in comparison with those obtained in July and November of 1971. The catches were mediocre but successive depressions hindered the work since we fished only seven and a half days out of 12. The temperature conditions near the bottom were such that the plateaux were deserted and the slopes weakly populated.

b) The second cruise carried out in May, was divided into 3 parts.

- In the first part, from May 2nd to 12th, the South, Southwest and North East of the St Pierre bank were prospected. The results were not spectacular except for the Skate (Raja radiata) and the American Plaice (Hippoglossoides platessoides) which reached respectively 431.5 kilos per 1/2 hour and 1,208 kilos per 1/2 hour, and 152 and 260 kilos per 1/2 hour. The figures obtained for the Cod are often very small, the greatest yields being 138.5 kilos and 144 kilos per 1/2 hour.

The over-all results for 33 trawl hauls show the following :
Skates 3,107 kilos ; American Plaice 1,424 kilos ; Cod 1,666 kilos ;
Witch 875 kilos ; Redfish 575 kilos.

The biological study - measurement, sexing, stomach dissection,
removal of otoliths -, concentrated mainly on the Cod and American Plaice.

- The second part, from May 16th to 20th, included 20 trawl hauls
and 20 stations for hydrographic and plankton study. The yields by species
on the bottom were relatively mediocre wherever the position and sounding
were, to the NW or E of the St Pierre bank, to the East of North Cape or
of Cape Egmont, on the plateaux or on the various slopes of the Burgeo bank.

The best yields were obtained as follows :

- Cod (Gadus m. morhua), 576 k/½ hour, in the NE of the St Pierre
bank (depth of 124 meters and temperature of 4.24° C) ;
- Redfish (Sebastes m. mentella), 1,120 k/½ hour, on the NW shores
of the St Pierre bank (depth of 210 m and temperature of 7.88° C) ;
- American Plaice (Hippoglossoides pl. platessoides), 251 k/½ hour,
off the north of St Pierre bank (depth of 90 m and temperature of 2.07° C) ;
- Haddock (Melanogrammus aeglefinus), 233 k/½ hour, to the NW of
St Pierre bank (depth of 150 m and temperature of 6.57° C) ;
- Red Hake (Urophycis chuss), 700 k/½ hour, off North Cape,
Cape Breton Island (depth of 250 m, temperature 4.55° C) ;
- Grey Sole (Glyptocephalus cynoglossus), 170 k/½ hour, off North
Cape (depth of 250 m and temperature of 4.55° C).

It is to be noted that R/V CRYOS was continually in touch with
the St Pierre trawlers, whose catches were also quite mediocre.

- The third part of the cruise took place between May 21st and
27th. There were 14 tows in 4 Vn where the operations were not very produc-
tive, apart from a catch of 1,031 k/½ hour of Cod, off Cape Smoky (Cape
Breton Island) ; 7 further tows made in 4 Vs were notably more productive
than the preceding ones, and particularly more diversified as to species.

- on the east slope of the Sable Island Gully : 623 kilos of
herring (Clupea h. harengus) in 55 minutes.

- to the SE of Sable Island bank : 2,388 k of Merluccius bilinearis
in one tow of 1 1/4 hours.

- to the SE of Sable Island bank, Illex i. illecebrosus was found ;
160 k/½ hour.

Deep Sea Prawn (Pandalus borealis) was observed in the deeps of
the 4 Vn banks, Artimon bank deeps and the so-called "Grey Sole deeps".

Graph n° 3 shows the size distribution of the American Plaice in 3 Ps in May 1972. 1,616 males, representing a weight of 637.2 kilos, were measured ; the sizes ranged from 10 to 56 cm ; polymodal distribution. 1,658 females, weighing 746.2 kilos were measured ; sizes varied from 9 to 74 cm ; polymodal distribution.

For the American Plaice in 4 Vn, in May 1972, 411 males weighing 77 kilos, and 472 females weighing 171.5 kilos were studied. The sizes of the males ranged from 11 to 53 cm while those of the females went from 11 to 65 cm (see graph 4).

As for the Silver hake (Merluccius bilinearis), graph 5 shows the size composition of the catches for the months of :

March	: non-sexed individuals	9 to 53 cm, peak at 31 cm ;
April	: " "	25 to 49 cm, peak at 33 cm ;
December	: " "	25 to 47 cm, peak at 33 cm.

The best yields were in waters whose temperatures varied between 6 and 8° C.

In ICNAF subarea 4 W (graph 6) :

April	: non-sexed individuals	21 to 41 cm, peak at 29 cm ;
May	: " "	23 to 43 cm, peak at 29 cm ;
December	: " "	17 to 41 cm, peak at 31 cm.

Graphs 7, 8 and 9 show the size compositions for the catches of Witch in May, that is :

N° 7 3 Ps sizes ranging from 12 - 59 cm, peaks at 36 and 40 cm ;
N° 8 4 Vn sizes ranging from 17 - 58 cm, peaks at 31 and 38 cm ;
N° 9 4 Vs sizes ranging from 27 - 46 cm, peaks between 34 and 35 cm.

For the Yellowtail Flounder, caught in May 1972 with a Lofoten trawl in 3 Ps, sizes ranged from 17 to 53 cm (graph 10) ; using the 35/42 trawl, sizes were between 15 and 54 cm, the mode being at 40 cm. In 4 Vs in May, the 35/42 trawl allowed catches with sizes between 26 and 43 cm, the mode at 34 cm (same graph) ; in December, again in 4 Vs, the sizes ranged from 26 to 47 cm, modes at 37 and 40 cm (graph 11).

As for the Cod (graph 12) in May 1972, ICNAF subarea 4 Vn : 1,116 males, representing 1,177 kilos in weight, were measured ; sizes ranged from 13 to 118 cm, with peaks at 40 and 55 cm.

Corresponding data for the females show 1,151 individuals weighing 1,438 kilos, whose sizes range from 19 to 124 cm, with peak at 40 cm.

As for the Redfish :

In 3 Ps, in May 1972, using a Lofoten trawl, (graph 13) we measured, without sexing, 1,502 fish weighing 218 kilos, sizes between

16 and 48 cm, peaks at 18 and 20 cm (these peaks reappear when trawls are carried out in the same region).

In 4 Vn, in May 1972, using a 35/42 trawl (graph 14) 565 fish (non-sexed) weighing 220 kilos were measured : sizes from 12 to 55 cm ; 2 modes : 18 and 35 cm. These fish had been caught on the Scatarie bank slopes and to the NE of Sydney.

Still in 4 Vn, in May 1972, using a 35/42 trawl (graph 15), 418 Redfish weighing 82 kilos were measured. Sizes ranged from 10 to 40 cm, with modes at 15 and 27 cm.

Finally in 4 Vs, in May 1972, using a 35/42 trawl (graph 16) 316 fish weighing 193 kilos were measured : 14 - 51 cm, modes at 20 and 36 cm.

The results obtained during the various investigations of benthic fish in 1972 are disappointing apart from the fact that they point out the presence of interesting species such as Silver hake, Argentines and Dogfish.

The Cod and especially the Haddock yields have diminished considerably.

B. Study of Pelagic fish.

We are concerned only with Atlantic Herring (Clupea harengus harengus). Four operations at sea allowed us to prospect the fish in the Laurentian areas ; that is 3 Ps, 3 Pn, 4 R, 4 T, 4 Vn, 4 Vs and 4 W (western sector). During 37 days at sea, a total of 82 hauls were made, with 64 hydrographic stations and 19 hauls of plankton. A map shows the positioning of the stations (fig. 17).

a) March campaign 1972.

9 days - 19 tows with the semi-pelagic trawl 35/42 used with the netzonde. The absence of herring throughout the prospected region is probably due to the hydrographic conditions : the Cabot straits and Sydney bay were blocked by ice from the end of December 1971 ; at the end of the survey, the outer boundary of the ice joined up in a line with the latitude of the "Grey Sole deeps" (South-east Scatarie bank, a large basin extending in length for 35 miles and in width for 15 miles) and with the Burgeo bank deeps.

Although the Herring was scarce, - a single sampling on the Southern slope of the Banquereau bank - good yields of Skate and Cod were obtained, particularly to the North of the Artimon bank (Lt varying from 37 to 97 cm) and in the "Grey Sole deeps".

Silver hake and American Plaice were detected in numbers to the South of the Banquereau bank.

b) April campaign 1972 (graph 18).

13 days - 34 hauls.

The work at sea yielded excellent catches in the Herring concentrations of the Gulf of St Lawrence on one hand and on the Banquereau bank on the other. In all, close to 16 tons of fish were caught. The pelagic trawl was used for the most part (78 % of the catches for 7 stations). The R/V CRYOS made her best catches, 5,801 kilos, at a depth of 30 m as recorded on the sounding apparatus, during a 35 minute trawl to the south west of St Paul Island. The semi-pelagic trawl 35/42 was replaced by the Lofoten trawl for the great depths prospected at the beginning of the cruise ; it was again used on the Banquereau on the grounds easily trawled and an average yield of 1,343 kilos/hour was obtained on the south slope of the bank.

In April near Isle aux Morts (subarea 3 Pn), 782 fish were measured. Graph A of figure 18 shows that the sizes ranged from 23 to 40 cm with peaks at 27 and 35 cm.

The herring in Cape St George (subarea 4 R), that is, 3,793 fish, measured between 24 and 41 cm, with peaks at 27 and 34 cm (see graph B, fig. 18).

In 4 T, Cape St Lawrence, 845 Herring ranged in size from 23 to 38 cm - peaks at 29 and 33 cm (graph C, fig. 18).

The fish of St Paul Island (4 Vn), that is, 1,116 Herring, measured 23 to 38 cm (graph D, fig. 18).

On Banquereau bank (4 Vs), again in April, 2,039 Herring had lengths between 25 and 41 cm, with a peak at 36 cm (graph E, fig. 18).

It must also be pointed out that during the survey of fish on the bottom in May 1972, 695 Herring were studied after a tow made near Sable Island (graph F, fig. 18). These fish measured 23 to 41 cm, with a peak at 36 cm.

The figures obtained from the depth-finder, of 3 principal types, have been kept for study.

c) November-December campaign 1972.

15 days - 29 tows.

The herring, under the influence of the very bad weather and unfavourable hydrographic conditions, moved towards the interior of the deep bays of Cape Breton Island, the Nova Scotia Peninsula and the South Shores of Newfoundland. In these bays, only the Canadian purse seiners could work and obtain commercial results.

The very limited samples which the R/V CRYOS did obtain were

frozen and studied at a later date at the CRIP St Pierre. 523 kilos of Silver Hake (Merluccius bilinearis), 333 kilos of Cod (Gadus m. morhua) and 30 kilos of White Hake (= morue barbu Urophycis tenuis) were frozen at -40° C on board the R/V CRYOS and handed over to the technical service of the "Société de Pêche et de Congélation (SPEC)" in St Pierre for technological appraising.

In short, only the April campaign allowed detection and catches on a commercial level. The fishing zones are situated on the Banquereau bank and also at the entrance to the Cabot straits, both on the Newfoundland and Nova Scotia sides.

C. The "Basse-Côte-Nord" cruise. (table 4)

This survey was carried out in agreement with the "Coopération Franco-Quebecoise" and took place from June 15th to July 16th, during which time the R/V CRYOS covered almost 3,000 nautical miles and occupied 137 stations of which 76 were dedicated to hydrography and 61 to fishing.

After the hydrographic research, which has been described in a few words above, the work at sea consisted mainly of :

a) prospecting of Deep Sea Prawn (Pandalus borealis) in the Esquiman channel, using a flat trawl 33,10/37,80. From June 22nd to 24th, 19 tows were made from the latitude of Corner-Brook in the South to Port-au-Choix in the North. 16 effective tows rendered Pandalus borealis regularly in commercial yields, in the region of the channel between the latitudes of Daniel's Cove and Port-au-Choix in waters whose temperature was above 4.5° C. Other fish found together with the Pandalus borealis were mainly Redfish, Greenland Halibut and Witch.

b) prospecting and fishing of Mallotus villosus. Active prospecting was carried out all along the intricate coasts of the Labrador region of Quebec, from the latitude of Flat Island (i.e more or less that of Port-au-Choix in Newfoundland) to that of Port Saint-Servan (Latitude of Flower Cove in Newfoundland).

The detection gave good results, but the catches were mainly composed of larval stages, many of which passed through the mesh, or were pressed back into the clogged-up cod end.

In short, Capelin was present everywhere between 100 and 175 meters in very cold waters, from -1.5° C to -1.7° C.

c) prospecting and fishing on the bottom. Trawling was carried out with a semi-pelagic trawl 35/42, or with a Lofoten trawl 31,20/17,70 when the depths were too great. Prospecting and trawling began off the "Basse-Côte-Nord" at two stations and at great depths, without success. Then

9 stations were made on the western slopes of Newfoundland, between Port-au-Choix and Table Point. The presence of herring was more or less constant but in small quantities, also Cod - Redfish - black Halibut.

A single profitable tow after a good detection on the bottom - sounding 200-240 m, 4,210 kilos of Redfish (Sebastes m. mentella with traces of S. m. marinus) in a tow of 1 hour ("filé et viré") - sandy muddy bottom.

Work continued on the 6th of July to the South East of Mecatina Island (Quebec coast) using a semi-pelagic trawl which brought in the following catches of Redfish, - 4,750 kilos/hour -, 3,270 kilos/3/4 hour -, 5,400 kilos/hour, etc...

On July 8th, we moved to the Newfoundland side of the Esquiman channel with three trawls yielding respectively 938 kilos/2 1/4 hours, 3,300 kilos/hour, and 5,900 kilos/2 hour. In each case there were traces of Herring.

The plateau and slopes of the Mecatina bank were prospected on July 11th with no profitable results. On July 12th we moved to the eastern side of the Esquiman channel. Herring reappeared in interesting quantities : 567 kilos/1/2 hr on July 13th to the west of Table Point, then 433 kilos of Herring mixed with 2,700 kilos of Cod.

In the same places the 2 hour tow at station 134 on a soft muddy bottom yielded 2,000 kilos of Herring, 3,125 kilos of Cod, 325 kilos of Redfish, etc...

On the 14th of July (st. 136) to the west of Big Cove Head, with the Lofoten trawl, at 180 m, clay and sandy bottom, 434 kilos of Redfish were taken in 20 minutes. On the same day in the Northwest part of the "Baie des Iles", a 1 1/2 hour tow yielded 128 kilos of Cod and 3,191 kilos of Redfish at a depth of 200 m.

To sum up, the prospecting was positive for the Redfish and is to be followed up for the Cod and Herring.

D. Tagging of Atlantic Salmon (Salmo salar) in the waters of Western Greenland and the Labrador sea (from August 20th to September 29th).

The main aim of the cruise was the tagging of Salmon in the Greenland waters in order to gather information on the proportion of this species which returned from Greenland as far as their waters of origin (European and American) as well as on the ratio of exploitation and mortality due to fishing.

In addition to this aim, a study was made of the distribution and density of Salmon inside and outside the fishing sector of Western Greenland (Labrador Sea stations) as well as the migration into and out of this sector.

Out of a total catch of 235 fish, 128 were tagged during the 17 fishing operations that the R/V CRYOS was able to carry out for its survey. This represents an excellent percentage of tagging, 54.5 %.

The data obtained will be dealt with outside the St Pierre Research Center.

E. Stomach contents of Herring (Table 5).

The stomach contents of the fish from the 1972 samplings have been studied, and an inventory of the organisms used as food has been drawn up.

These observations show the importance of Calanus finmarchicus as food for the herring during its phases of trophic and prematuration concentration.

A method has been originated permitting the determination of the index of stomach-filling of the Clupea h. harengus.

In the future the fluctuations of zooplankton in the fishing zones will be observed and a comparative study made with the stomach contents of the Herring.

B. France (Metropolitan)

by R.H. Letaconnoux

In 1972 cod fishing was poor with a total of only 44,700 tons.

Subareas 1 and 2

Off the West Greenland coast 5,060 tons only were fished mostly in April-May in Div. 1C and 1D with a few catches also in autumn between Div. 1B and 1F.

Along the Labrador Shelf 8,600 tons were taken, mostly in Div. 2J and 3K, between January and April with some fishing from September to December.

Subareas 3 and 4

Subarea 3 was fished all year, for a total of 16,900 tons, with maximum activity from February to April.

A total catch of 20,000 tons was made in Subarea 4, mostly in Div. 4R from February to April (10,600 tons) and in Div. 4V from January to March (8,300 tons).

Subarea 5 and Statistical Area 6

Herring was caught in November in Subarea 5 (500 tons) and an exploratory trip was conducted from October to December in Statistical Div. 6B and 6C with the result of 15 tons of squid and 216 tons of lobster.

Table 1. Saint-Pierre et Miquelon - Pêche nominale
(Exprimée en tonnes métriques)

Sous-zone	Morue	Anon	Balai	Rouget	Merlu	Soie	Fletan	Chat	Lotte	Rales	Carrelet	Manureau	Non identifié	Total
3 L	20		100							23	9		11	163
3 M	12		192	2		3	1	4		56	346		79	695
3 O	2		30	2		14				19	3		3	73
3 Ph	3		2	2		1					2		1	11
P.I.	446	52	372	558	4	69	2	24	5	182	183		95	
3Ps P.A.	990		11							2			25	
Total	1 436		383							184				3 020
Total sous-zones	1 473	52	707	564	4	87	3	28	5	282	543	25	189	3 962
4 R	3	1		2		5								11
4 T	6		4	2		3		1		2	2		2	22
4 Vn	62	3	27	49		21		1		5	13		6	190
4 Ve	226	2	93	58	2	89		2		7	10		10	499
Total sous-zones	297	6	124	111	2	118		4		17	25		18	722
(Sous-zone inconnue)	22		95								13		28	156
Total g'nfrel	1 792	58	926	675	6	205	3	32	5	299	581	25	235	4 542

P.I = pêche industrielle
P.A = pêche artisanale

Table 2. Industrial and Traditional fishing - Nominal fishing
1960-1969
(in metric tons - fresh round fishes)

Années	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	Subareas
3 L	2,587	1,816	675	1,506	869	1,168	1,194	929	443	156	3 L
3 M	14	-	-	-	-	-	-	-	-	-	3 M
3 N	510	1,055	505	821	364	1,307	595	705	208	-	3 N
3 O	3,240	5,867	3,377	3,001	2,180	1,363	391	638	124	63	3 O
3 Pa	-	4,810	-	-	-	492	1,168	-	16	88	3 Pa
3 Pb	4,246	-	2,958	2,894	3,620	3,823	6,103	5,621	2,924	4,522	3 Pb
4 R	12	-	-	-	132	108	-	437	920	1,060	4 R
4 S	-	-	-	-	-	-	-	-	280	146	4 S
4 T	6	20	-	-	-	-	-	-	445	112	4 T
4 Va	-	4	-	-	1,487	1,538	1,051	-	584	1,061	4 Va
4 Vb	36	3	-	-	-	168	-	-	416	421	4 Vb
4 W	-	-	-	-	-	-	-	-	-	-	4 W
4 X	-	-	-	-	-	-	-	-	66	22	4 X
Total	10,651	13,575	8,113	8,222	8,652	9,967	10,502	8,330	6,426	7,631	
Cod	4,416	5,595	2,808	3,273	3,812	4,720	4,862	2,544	1,952	3,071	
Haddock	2,918	4,653	2,429	1,137	1,008	624	933	441	275	1,121	
Redfish	276	670	955	1,103	1,084	1,185	2,053	2,333	2,583	2,631	
Gray Sole	271	-	285	1,496	-	-	-	-	190	-	
American Plaice	-	1,504	575	301	1,772	2,331	1,927	1,878	1,114	392	
Flounders and unidentified	2,770	953	681	912	976	1,108	727	1,134	312	416	

Table 3. Traditional fishing at St. Pierre and Miquelon
(in metric tons)

Month	Cod	American plaice	Skates	Mackerel	Total
May	37				37
June	331,5	0,2	0,3		332
July	246	6,8	0,7		253,5
August	214,5	3,5	0,5	25	243,5
September	134	0,4			134,4
October	24,5	0,1	0,5		25,1
November	2,5				2,5
Total	990	11	2	25	1 028 t

Table 4. The Basse-Côte-Nord cruise.

Spawning type	Area	Date	Number examined	Maturity stage	Percent fat
Autumn	Cape St. George (bottom)	April 16th-17th	10	VIII	2.06
	Cape St. George (pelagic)	April 19th	4	VIII	2.91
	Isle aux Morts (pelagic)	April 20th	5	VIII	0.84
	St. Paul Island (pelagic)	April 21st	15	VIII	3.96
	Table Pt. (bottom)	July 13th	5	III . IV	18.87
	Cape Dauphin (bottom)	late november	2	VIII	5.45
	Banquereau Mar. South slope (bot.)	March 5th	4	VIII	4.30
	East Gully Sable Is. (pelagic) Apr.	April 24th	10	VIII. VIII-III	3.96
	Banquereau South slope Apr.	April 26th	6	VIII	2.83
	East Gully Sable Is. (bottom) May	May 24th	8	VIII	9.77
Spring	Cape St. George (bottom)	April 16th-17th	8	IV. V	5.09
	Cape St. George (pelagic)	April 19th	3	IV. V	2.81
	Isle aux Morts (pelagic)	April 20th	1	IV	5.57
	St. Paul Island (pelagic)	April 21st	5	IV. V	6.022
	Table Pte	July 13th	1	VIII	16.31

Table 5. Stomach contents of herring - 1972 samplings.

Month Stations	March	April	April	April	April	May	July	November	November	November	December	December						
	Y 85	Y 112	Y 129	Y 131	Y 136	Y 150	Y 150	Y 142	Y 138	Y 491	Y 489	Y 515	Y 521					
Percentage of taxa										matures : Imatures		matures : Imatures						
Hydromedusae																		
Chaetognatha																		
Pteropoda																		
Ostracoda																		
Copepoda		47.36	98.89	99.69	79.50	98.59	97.14	39.0	5.6	51.18	67.14	54.78	65.21	44.26	5.87	32.31	27.58	
Cumacea																		
Amphipoda		26.0	6.25	0.20		0.40	0.05	2.46	61.0	3.96	t	11.82	10.92	19.56	38.69		32.26	
Euphausiacea		74.0	46.39	0.91	0.31	20.10	1.36	t	94.4	44.86	32.86	33.02	23.87	1.73	5.54		35.43	72.42
Decapoda (larvae)								0.10							44.36			
Teleostei (larvae)								0.10										
Phytoplankton																		

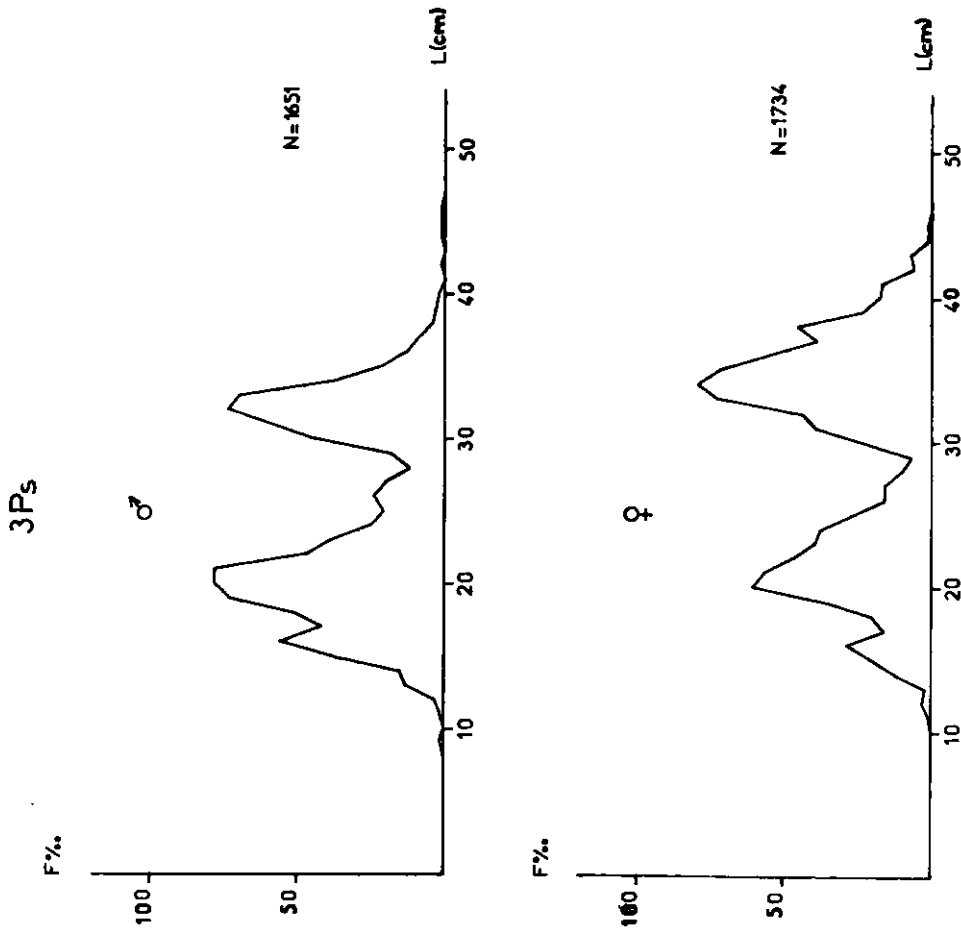


Fig. 1. Length composition of cod in Subdiv. 3Ps from research vessel surveys, February 1972.

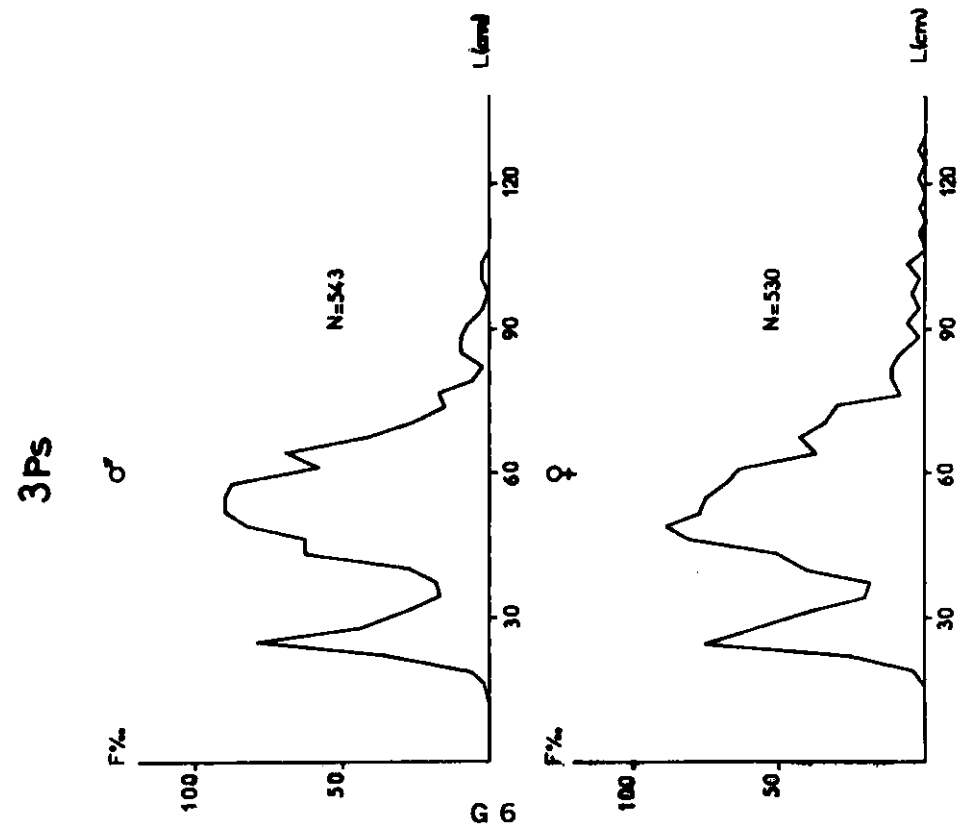


Fig. 2. Length composition of redfish in Subdiv. 3Ps from research vessel surveys, February 1972.

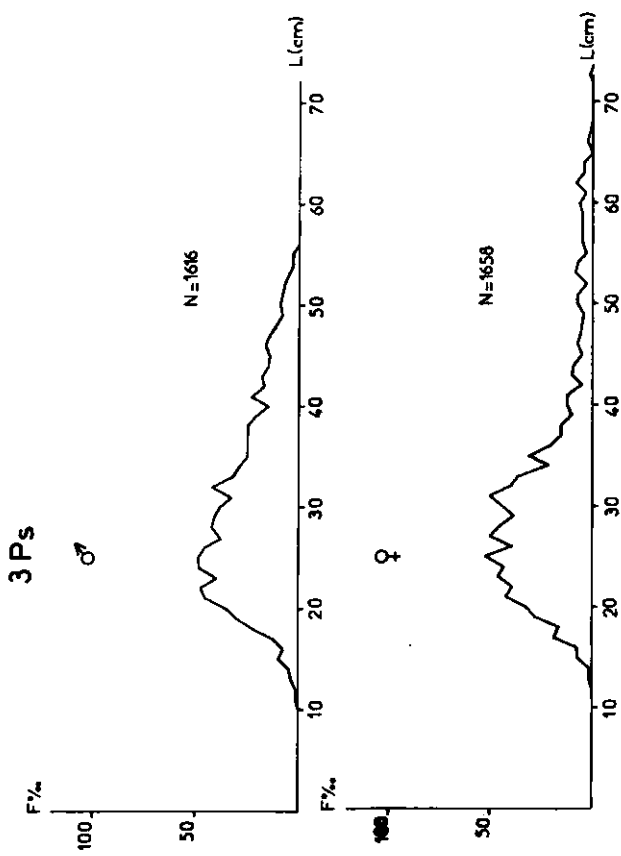


Fig. 3. Length composition of American plaice in Subdiv. 3Ps from research vessel surveys, May 1972.

G 7

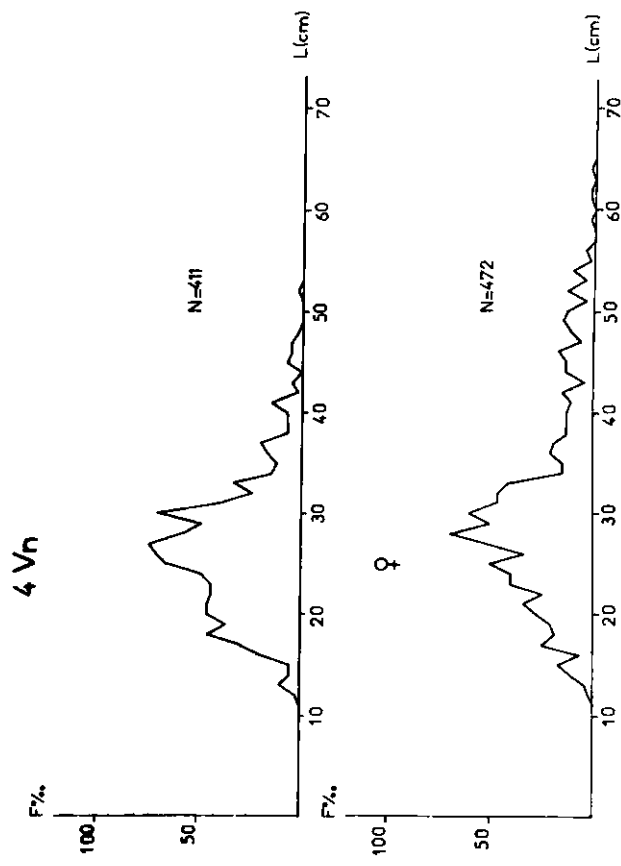


Fig. 4. Length composition of American plaice in Subdiv. 4Vn from research vessel surveys, May 1972.

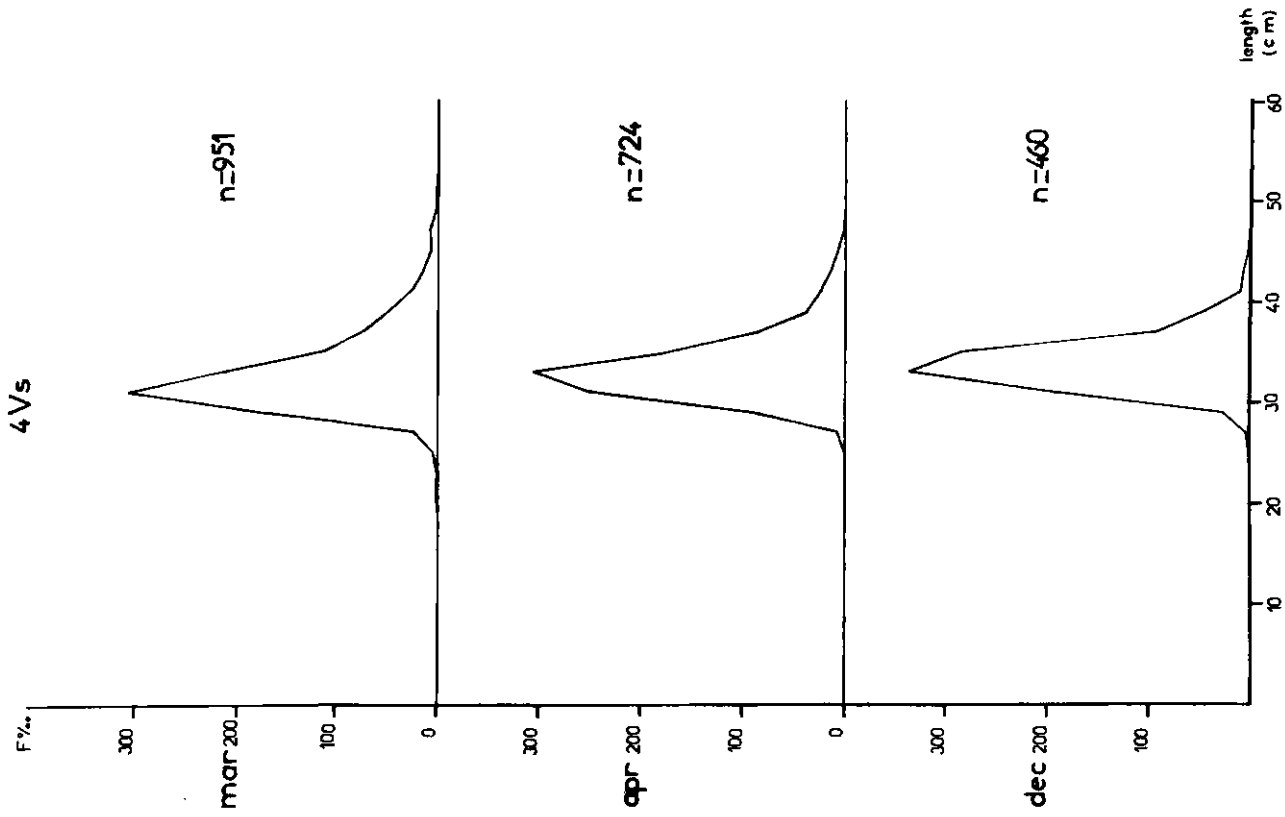


Fig. 5. Length composition of silver hake in Subdiv. 4Vs from research vessel surveys, May 1972.

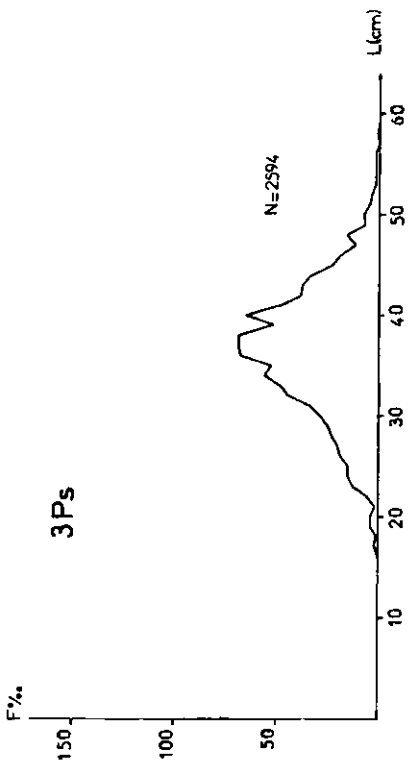


Fig. 7. Length composition of witch flounder in Subdiv. 3Ps from research vessel surveys, May 1972.

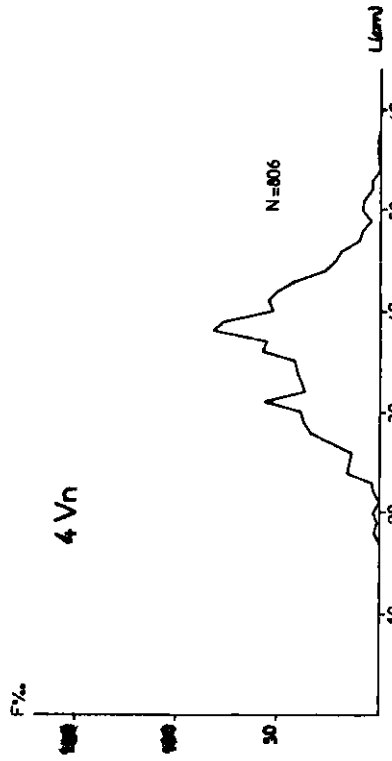


Fig. 8. Length composition of witch flounder in Subdiv. 4Vn from research vessel surveys, May 1972.

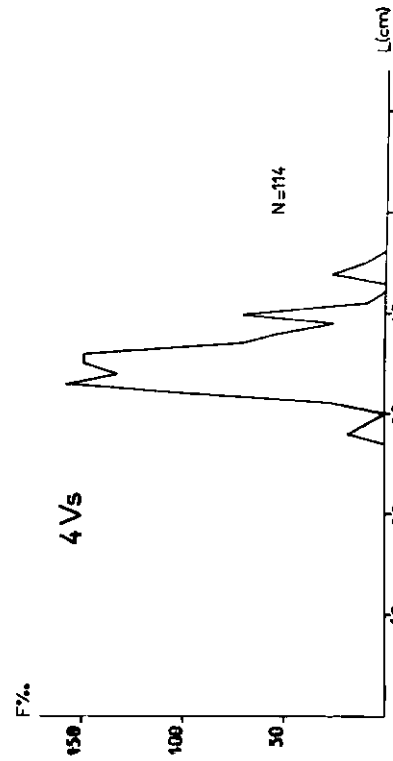


Fig. 9. Length composition of witch flounder in Subdiv. 4Vs from research vessel surveys, May 1972.

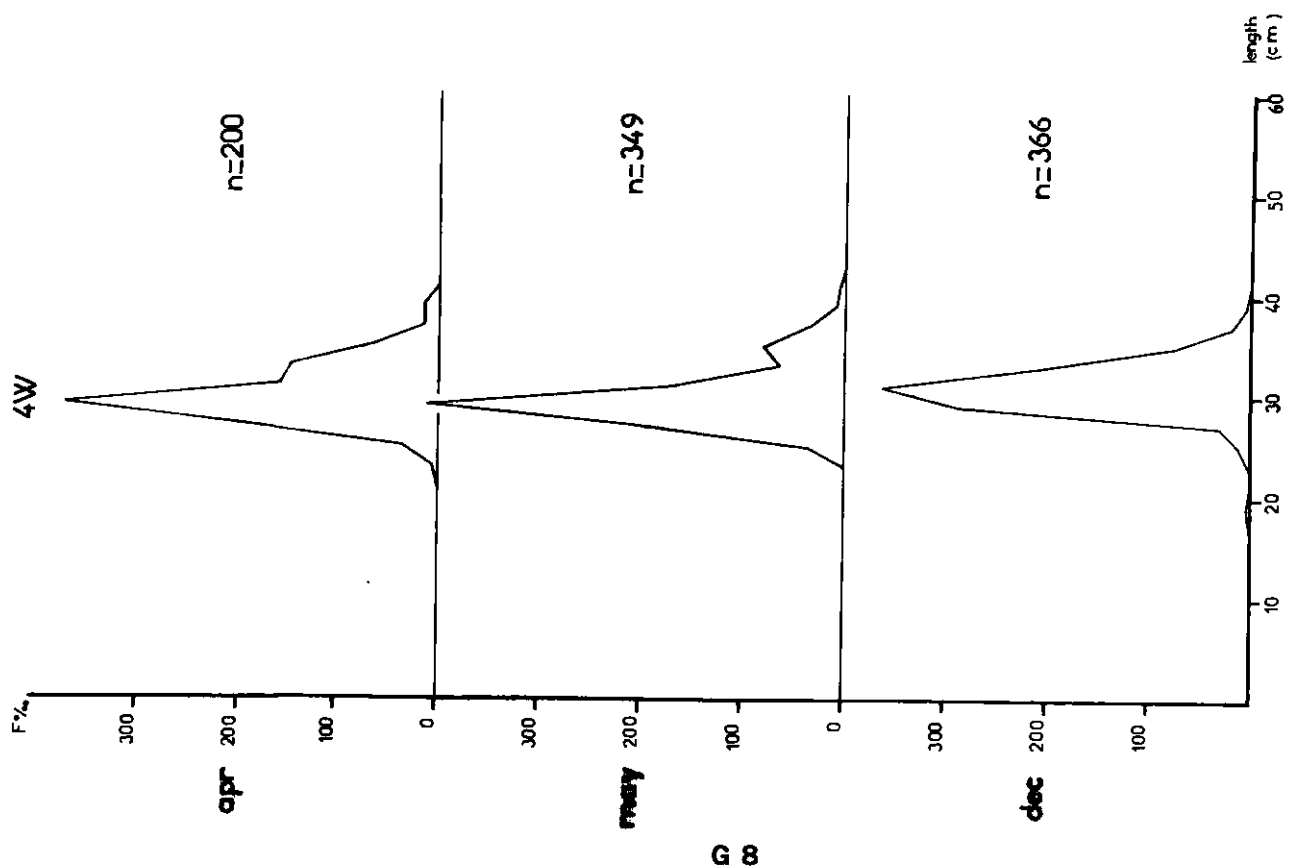


Fig. 6. Length composition of silver hake in Div. 4W from research vessel surveys, May 1972.

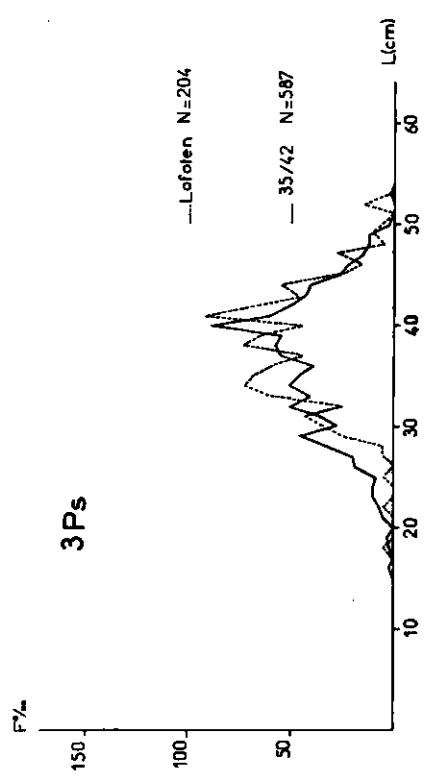


Fig. 10. Length composition of yellowtail flounder in Subdiv. 3Ps from research vessel surveys, May 1972.

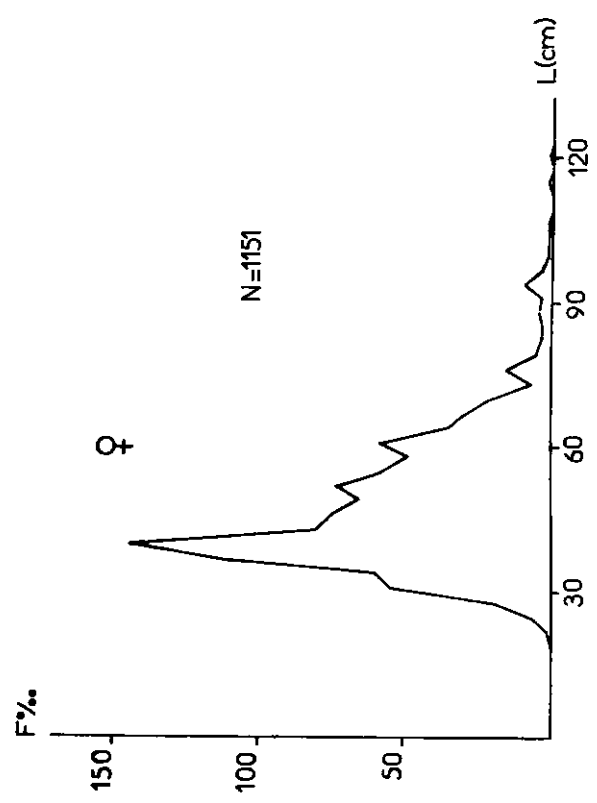
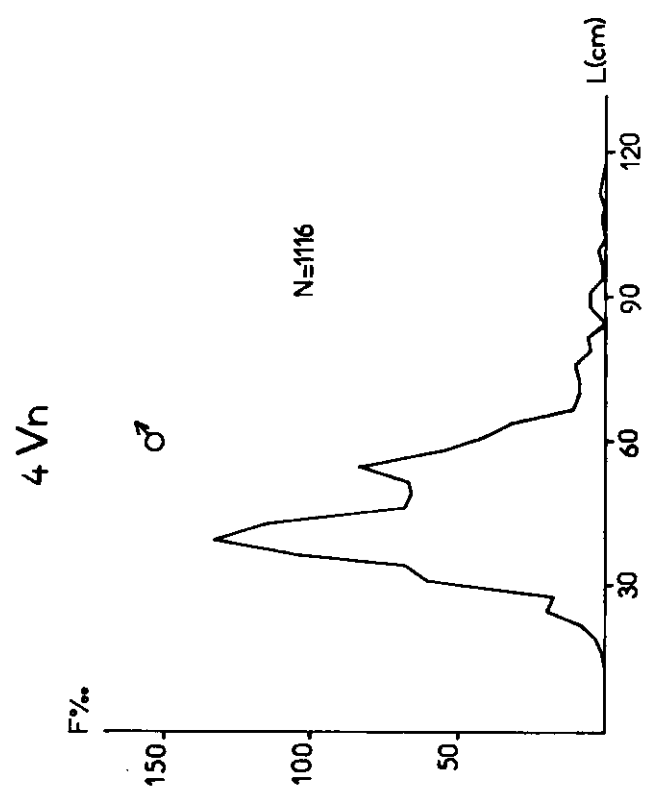


Fig. 12. Length composition of cod in Subdiv. 4Vn from research vessel surveys, May 1972.

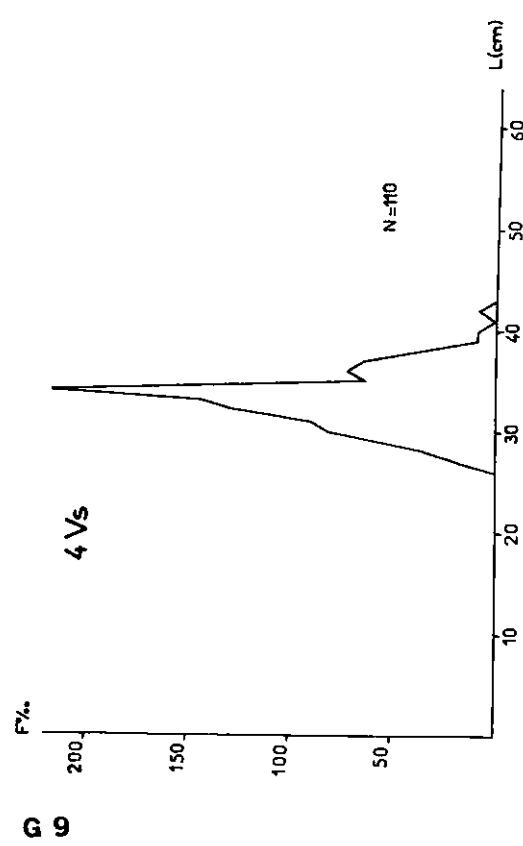


Fig. 11. Length composition of yellowtail flounder in Subdiv. 4Vs from research vessel surveys, December 1972.

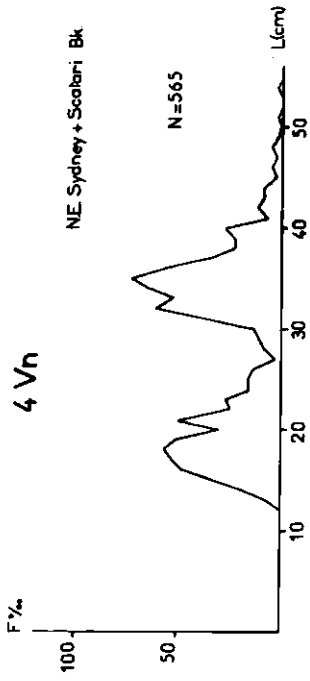


Fig. 14. Length composition of redfish in Subdiv. 4Vn from research vessel surveys, May 1972.

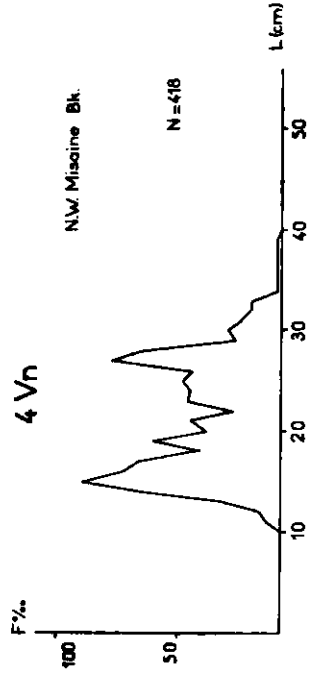


Fig. 15. Length composition of redfish in Subdiv. 4Vn from research vessel surveys, May 1972.

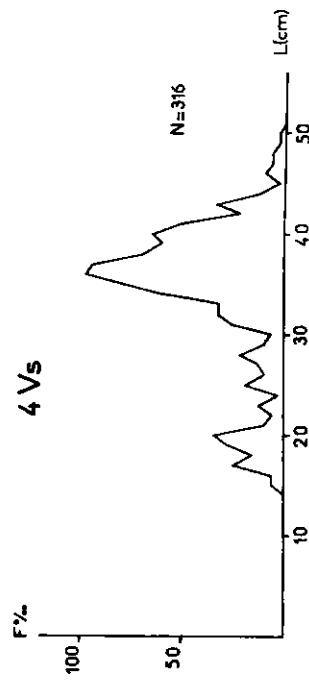


Fig. 16. Length composition of redfish in Subdiv. 4Vs from research vessel surveys, May 1972.

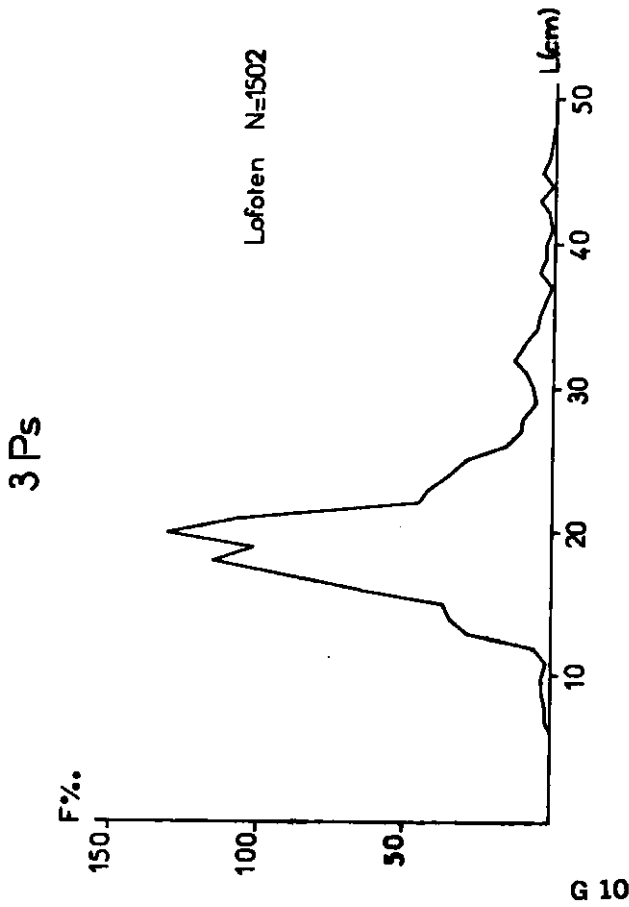
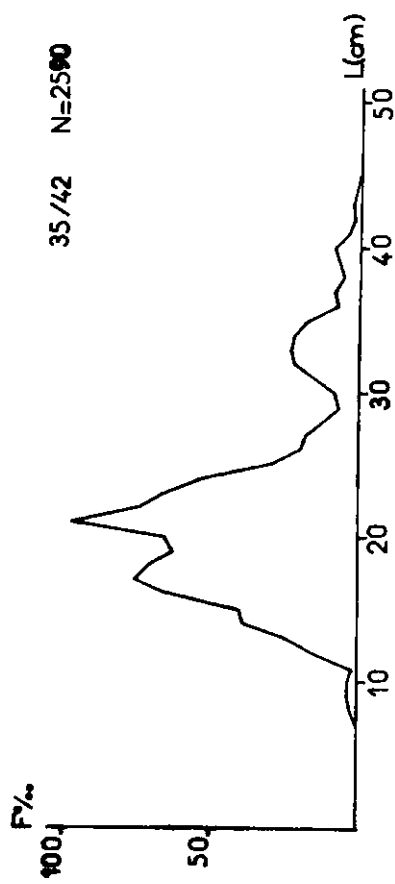


Fig. 13. Length composition of redfish in Subdiv. 3Ps from research vessel surveys, May 1972.



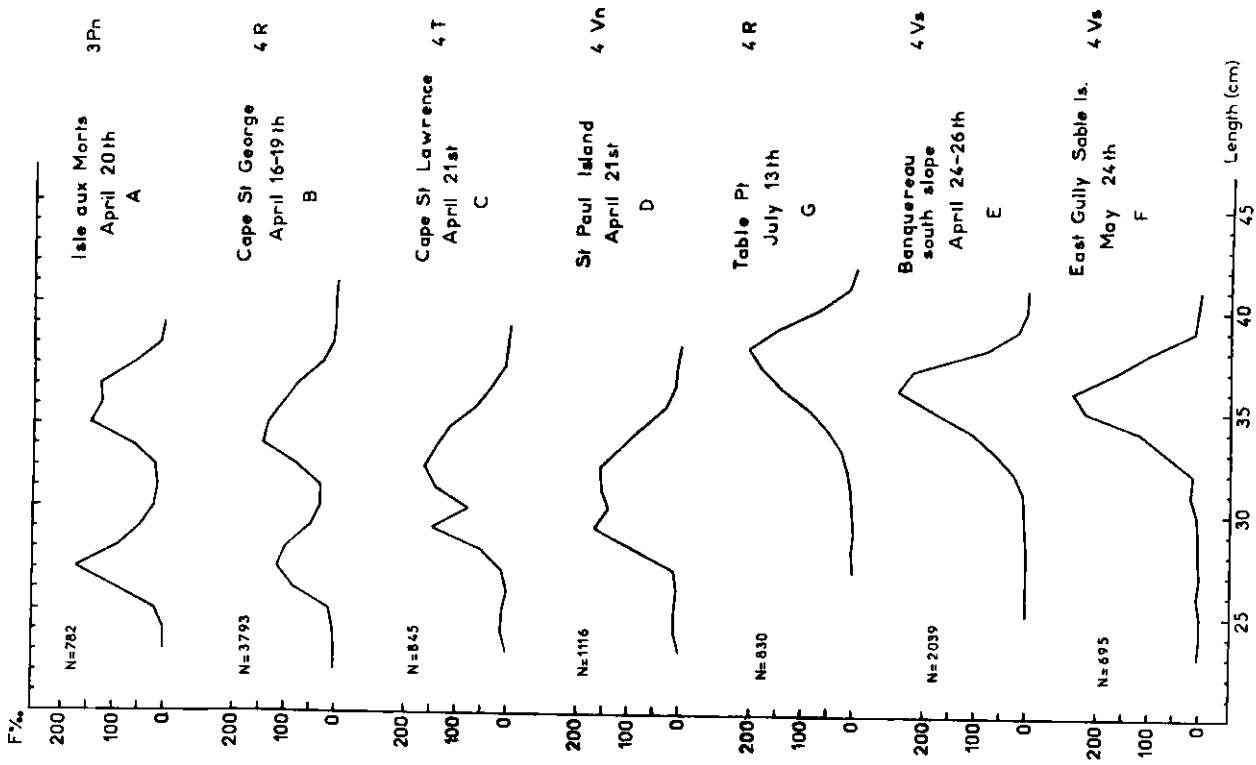


Fig. 18. Length composition of herring from research vessel catches, April-July 1972.

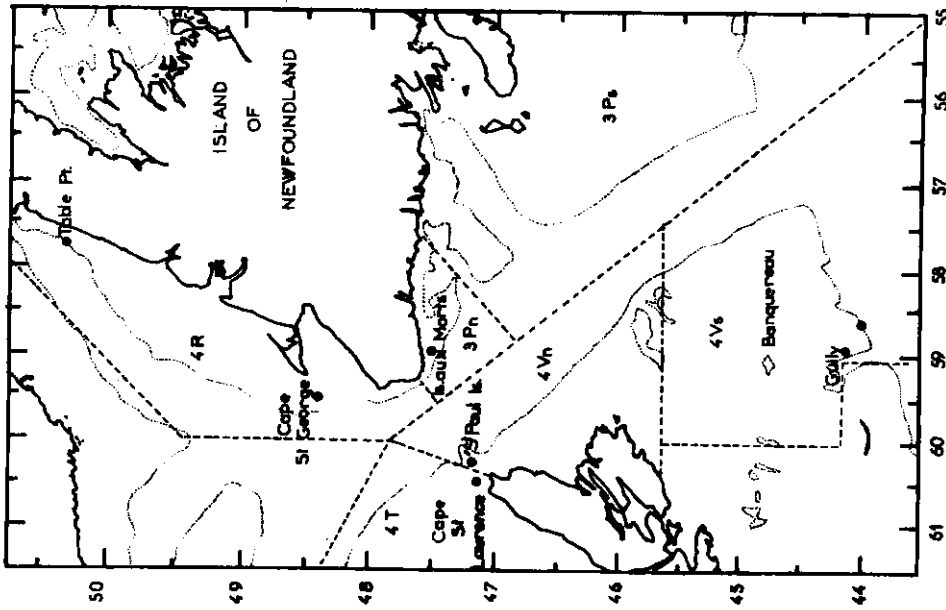


Fig. 17. Map showing positions of stations in herring explorations, March-May 1972.

INTERNATIONAL COMMISSION FOR



THE NORTHWEST ATLANTIC FISHERIES

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ANNUAL MEETING - JUNE 1973

Corrigenda
to
French Research Report, 1972

Note from the Secretariat:

In the French Research Report, 1972, on page 13, there is reference to catches of 15 tons of squid and 216 tons of lobster taken in Statistical Area 6 by an exploratory vessel.

Information received on 14 May 1972 on supplementary STATLANT 21A, in response to a Secretariat request for verification of these catches, indicates the following distribution of catches:

Crustaceans	6A	1 ton
(presumably	6B	5 tons
lobsters)	6C	<u>1</u> ton
	Total	<u>7</u> tons
Molluscs	5Z	6 tons
(presumably	6A	64 tons
squid)	5B	213 tons
	6C	<u>12</u> tons
	Total	<u>295</u> tons

The catches of squid and lobster given on page 13 of the Research Report should, therefore, be deleted and the above quantities (295 and 7 tons, respectively) substituted.

Assistant Executive Secretary

