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French Research Report, 1973

by

R.H. Letaconmoux
ISTPM, Nantes, France

and

J. Morice
ISTPM, St. Pierre and Miquelon

Section I. French Metropolitan Fishery

by

R. H. LETACONNOUX

A. STATUS OF THE FISHERIES

Only 32 447 t of cod were fished in the ICNAF area in 1973 (table 1).

Due to severe ice condition this year again few catches were made along the south Labrador shelf and North of the Great Bank, from march to june : 251 t in 2 J, 3 541 t in 3K and 1 585 t in 3L.

Most of the cod catches were made in and outside the Gulf of Saint-Laurent, 16 525 t from january to may in 4R, 8 772 t from february to april in 4Vn, 1 008 t in 3P and 438 t in 4W.

With the exception of 38 t in april, no fishing was conducted off Greenland in 1973.

In 5Z, 2 395 t of herring were fished in november-december and 256 t of squids in december.

Section II. St. Pierre and Miquelon Fishery

by

J. MORICE

A. STATUS OF THE FISHERIES

In 1973 the catch amounted to a total of 5,466 tons of various fishes caught, as last year from Subareas 3 and 4. We can point out a slight increase in the landing. 11 p.cent more than in 1972 (4,842 tons), this production being inferior compared to the 5,528 tons caught in 1971 and 6,784 tons in 1970.

This increase in the catch is only due to the increase of the catch of Redfish by pelagic trawls in the Gulf of St Lawrence, the other catches being roughly speaking the same.

Cod is caught by trawlers from December to May in the Subareas 3 and 4. More than half of the catch comes from the local traditional fishing (dories) from May to November.

Once again we may point out the very small quantity of Haddock 43 tons compared to the 52 tons in 1972.

Redfish (1,701 tons) is almost exclusively caught in Divisions 4 R and 4 S in the Gulf of St Lawrence (75 per cent of the catch). Table n° 2 illustrates the importance of the catches from May to November.

Most of the American Plaice are caught in the Plateaux of the Subdivision 3 Ps and from the Division 3 L (61 tons) 3 N (27 t) and 3 O (222 tons).

There is a noticeable increase in Yellowtail landing 460 t in 1973, 205 t in 1972 ; Yellowtail is caught in the Divisions 3 L (127 t in May), 3 N (133 t in September), 3 O (108 t in September) and in 3 Ps (80 t in November).

Traditional fishing.

A decrease in the catch of cod (976 t in 1973, 990 in 1972), the decrease is compensated counterbalanced by an extra catch of mackerel : 164 tons (table 3).

B. SPECIAL RESEARCH STUDIES

Throughout the year 1973 various investigations were carried out by R/V CRYOS in concordance with the program proposed to I.C.N.A.F.

The works which were carried out mainly in the first six months deal with the study of cod, herring and squid. As in 1972 in accordance with the cooperative program, the R/V CRYOS has carried out the hydrographic work and exploratory fishing in the Basse-Côte-Nord in Quebec. In september R/V CRYOS has also participated in a joint Gulf of Maine - Georges Bank survey for Larval Herring together with foreign Research vessels.

1 - Environmental studies -

a) Gulf of St Lawrence (4 R) and South of Newfoundland.

During this period 40 hydrographic stations were carried out on 6 sections : 3 in the Division 4 R in 3 Pn - 3 Ps (ICNAF Res.Doc. 73/35 and 73/36).

b) Strait of Jacques Cartier.

88 hydrographic stations carried out on hydrographic sections have permitted to study of the environmental condition.

c) Georges Bank and Gulf of Maine.

From the September 15th to September 29th the R/V CRYOS has carried out 83 plankton hauls with Bongo Net according to a pre-established network of stations.

These hauls were carried out together with an hydrographic program implying 91 stations of XBT SIPPICAN and some samples of water for the study of salinity in the surface and the study of thermocline (ICNAF Res.Doc. 74/).

Biological Studies.

The Saint Pierre Research Centre carried out in 1973 seven surveys on various species on many Subareas of ICNAF. These are :

- 1) The first part of the cruise was devoted to the study of Cod in Division 4 R from January 22nd to February 2rd, then in Division 3 P from February 5th to February 16th and Division 4 V from February 19th to March 6th.
- 2) The second part of the cruise was devoted to the study of Herring in Division 4 R from April 7th to April 18th, then in Division 4 T on April 19th and in Division 4 V from April 20th until May 1st.

- 3) The third part of the cruise was devoted to the study of Squid in Division 4 X from May 12th until May 15th, in Subdivision 5 Ze on May 14th, in Division 4 W from May 17th until May 19th, in Subdivision 4 Vs on May 20th, in Division 3 P from May 21st until May 27th, in Division 3 O from May 28th until May 31st and Division 3 M on June 1st and June 2nd.
- 4) The fourth part of the cruise was devoted to a "Basse-Côte-Nord" cruise ⁱⁿ Quebec in Division 4 S from June 24th until July 30th.
- 5) The fifth part of the cruise was devoted to a campaign in Georges Bank and the Gulf of Maine (Subdivision 5 Ze) from September 1st to October 8th.
- 6) Another part of the cruise was also devoted to the study of Cod in Division 4 R from November 5th until November 17th.
- 7) The seventh part of the cruise was devoted to a study of Saint Pierre Bank (Subdivision 3 Ps) from November 26th to December 5th.

- Cod -

a) Division 4 R.

In 1973 the studies have mainly dealt with Cod in Division 4 R. For this purpose R/V CRYOS carried out 29 trawl hauls and 20 hydrographic stations in this Division (4 R) during the first cruise.

The main aims being to get information about the stock of Cod submitted to the French Fishing Fleet and about the bathymetric distribution of Cod in this time of the year in relation to thermic environment (Res.Doc. 73/35-36).

The best yield has been 13,508 kg in an hour's time fishing at a depth of 240 m and a temperature of 5.3°C.

The length are distributed from 13 to 100 cm, with a modal length of 43 cm (fig.1). 803 otoliths have been taken off and that study allowed us to know the age composition of the catch.

The Cods born in 1968 and 1966 (age group IV and VI) constituted the most part of the catch. Besides, juvenile specimens whose modal length was 19 cm have been caught within the 12 miles (fig.2).

During the "Herring" campaign 20 trawl hauls have also been carried out in this area. We have also obtained data information on Cod in 17 stations.

The best yield was 6,707 kg in 40 minutes at a depth of 175 m and a temperature 2.2° C. Length measurements of all the Cods caught ranged between 16 and 100 cm with a modal length of 35 cm (fig. 1). As in January, the Cods of the year-class 1968 and 1966 (age group V and VII, the winter-ring of winter 1972-1973 being very clear at this time of the year) composed the main part of the catch.

R/V CRYOS has also studied again in November the locations of trawls carried out in January. The yields were notably less productive than the ones in January and April. The best catch was 212 kg in half-an-hour fishing. In this period of the year the length measurements ranged between 10 and 139 cm with a first mode at 25 cm (these cods being caught as in January within the 12 miles) and a second mode at 46 cm (nearly the same as the one found in January) (fig.3).

b) Division 4 Vs.

During the first survey, in March, 2,668 length measurements were made and 405 otoliths were collected.

The length ranged between 28 and 100 cm with a modal length of 49 cm (fig.4). The year-class 1968 (age group V) was also the most numerous (fig.5).

Two samples were also measured in April and May (fig.4).

c) Other Divisions.

During the other surveys carried out by R/V CRYOS, samples of Cod were measured in Divisions :

- 3 Pn in February and April (fig.6),
- 3 Ps in February and December (fig.7),
- 4 Vn in February and April (fig.8),
- 4 T in April (fig.9),
- 3 O and 3 M in June (fig.10),
- 5 Ze in September (fig.11).

- Herring -

4 000 Herrings have been studied with a view to study various biologic works. Length frequencies and age composition of the various populations and the results of the meristic characters are shown in Res.Doc. 74/ .

The fat content of herring samples is given in table 4. We have studied the fat content following the Gerber Method.

- Silver Hake -

Three areas have been studied (fig.12):

- In Division 4 W the modal length is the same from February to May (28 cm).

- In Division 4 X the modal lengths differ according to the studied areas (19 and 32 cm in Brown Bank) (and 28 cm in South La Have Bank and South Baccaro Bank).

- In Subdivision 5 Ze, the main mode reaches 29 cm in September and we find a second mode at 23 cm in October.

- American Plaice -

R/V CRYOS has studied American Plaice in four ICNAF zones at various periods of 1973.

a) Subdivision 3 Ps.

In February samplings were carried out in North Saint Pierre Bank and Burgeo Bank. The yields were generally scarce and irregular, the best samplings were 184 and 107 kg in half an hour's time.

The first mode at 20-21 cm ; the second mode at 42-43 cm (fig.13).

In December the area studied was mainly the South part of the St Pierre plateau.

The catch was scarce (1 to 50 kg ; the best yield being 157 kg in half an hour). The range in length was nearly the same as in February in the North part of the Bank (ranging between 12-13 cm to 63-64 cm). We have found only one mode at 23-24 cm.

b) Division 4 R.

In January, American Plaice was caught in some stations only, but the yields have been rather important (317 to 229 kg in half an hour).

The number of the specimens showed that major lengths were rather important (fig.13).

In November the length distribution showed two modes, one at 13-14 cm, the other one at 22-23 cm.

c) Subdivision 4 Vn.

The average catch was : 30 to 50 kg in half an hour with a modal length at 28-29 cm (fig.13).

d) Subdivision 5 Ze.

Some specimens of American Plaice were caught at each station (2 to 13 kg in half an hour) on the North Slopes of Georges Bank.

- Yellowtail -

Subarea 3 (fig.14).

The age and length estimates conducted in division 3 O in May show the presence of specimens whose lengths range between 32 and 42 cm with a mode at 38 cm.

The most numerous year-classes are classes 5, 6 and 7.

In Subdivision 3 Ps the sampling has been carried out with traditional fishing. The length composition is plurimodal with specimens whose age range between 2 and 11. Among the oldest specimens the number of female yellowtails is predominant.

In the same subdivision (3 Ps) the sampling carried out by R/V CRYOS in December in Saint Pierre Bank show that the length composition is plurimodal, year-classes 4, 5 and 6 being predominant.

The commercial landing from the Saint Pierre trawlers show a mode at 36 cm in Division 3 L in May and 3 N in May and October.

Subarea 4 (fig.15)

In subdivision 4 Vs the length compositions are more extensive in the East of Banquereau (in April) than in the North Gully of Sable Island (in May).

The modal length is roughly speaking the same as the female yellowtails (36 cm). As for the male yellowtails the modal length is 32 cm in Banquereau and 35 cm in the North Gully of Sable Island.

In both areas female yellowtails are older than the males.

In Division 4 W the modal length composition is at 28 cm in the Sable Island Bank and at 35 cm in the South of the Gully of Sable Island. The year-class 5 is much less frequent in this area (in the South).

Subarea 5 (fig.15).

In Subdivision 5 Ze, the length composition is plurimodal and year-classes range from 1 to 6 (mode at 3).

A study of meristic and metric characters in Nova-Scotia Banks and Georges Banks are shown in Res.Doc. 74/ .

- Squids -

R/V CRYOS has carried out two surveys on commercial Squids in N.W Atlantic. During the first cruise the Northern Slopes of St Georges Bank and Nova-Scotia Banks have been prospected from May 12th to May 21st; then the Slopes of Newfoundland Banks (Grand Bank and St Pierre Bank) have also been prospected from May 25th until June 3rd.

All these areas include subdivisions 4 Vs, 4 W, 4 X, 5 Z, 3 Ps, 3 O and 3 N.

The second survey was carried out in Georges Bank from september 3rd until October 10th.

During the spring campaign (May-June) 598 kg of Squids (*Illex illecebrosus*) were caught. Most of the catches were made in Nova-Scotia Banks, 586 kg in 20 hours' fishing, and 12 kg only in 21 hour's fishing in Newfoundland Banks.

4 011 specimens have been measured. The results of the measurements and the yields in the most productive stations are shown in fig.16.

The best yields were obtained in the North of Georges Bank, in Browns Bank and in Western Bank, at depths ranging between 90 and 281 m.

In Newfoundland Banks, the catches have not exceeded 2 kg in half an hour. These samples were mainly immatures.

The modes (mantel length) range between 13 and 15 cm. Commercial tows are carried out in waters, the temperature of which reaches 9° C.

The data of the September-October Survey in Georges Bank are published in Res.Doc. n° 74/ .

The distribution of the yields of both commercial Squids Loligo pealei and Illex illecebrosus is shown in this note, together with the distribution of the length frequencies.

Table 1. France (Metropolitan) fishery statistics, 1973.

Cod	Total	J	F	M	A	M	J
1 D	38				38		
2 J	251			139			112
3 K	3 541				1 194	1 850	497
L	1 585				1 141	444	
M	79				79		
N	5	5					
P	1 008	5	245	758			
4 R	16 525	4 272	6 989	3 416	1 821	27	
T	160				155	5	
Vn	8 772	5	3 650	4 997	120		
W	483		127	356			
Total	32 447	4 287	11 011	9 666	4 548	2 326	609

Table 2. France (St. Pierre and Miquelon) fishery statistics, 1973.

ICNAP Divisions	Cod	Catches (tons)								Total
		Haddock	Redfish	A. plaice	Witch	Yellowtail	Skates	Mackerel	Others	
3 L	4	/	/	61	/	127	2	/		194
3 N	5	/	/	27	14	133	19	/	3	201
3 O	12	/	/	222	6	108	40	/		388
3 Pa	1 165	16	155	547	112	80	111	164	11	2 361
Total	1 186	16	155	857	132	448	172	164	14	3 144
4 R	109	13	756	15	2	3	4	/	1	903
4 S	/	/	437	/	/	/	/	/	/	437
4 T	105	2	81	18	1	1	3	/		211
4 Vs	113	7	206	21	14	2	19	/		383
4 Vn	200	5	65	57	36	6	13	/	4	386
4 W	1	/	1	/	/	/	/	/		2
Total	528	27	1 546	111	53	12	39	0	6	2 322
Grand total	1 714	43	1 701	968	185	460	211	164	20	5 466

Table 3. Results of traditional dory fishing at St. Pierre and Miquelon in 1973

Month	Catches (tons)				Total
	Cod	A. plaice	Skates	Mackerel	
May	69	/	/		69
June	271	/	/		271
July	224	/	/		224
August	203	/	/	43	246
September	79	/	/	119	198
October	119	/	/	2	121
November	11	/	/		11
Total	976			164	1 140

Table 4. Percentage fat content of autumn and spring herring from various areas.

Spawning type	Area	Date	Number examined	Maturity stage	Percent fat	
Autumn	St Georges Bay	April 10 th	30	VIII	5.62	
	Bay of Island	April 16 th	5	VIII	4.50	
	Bonne Bay	April 18	13	VIII	6.50	
	Martin Pte	April 18	9	VIII	4.72	
	N.W Sable Island		March 2	2	I	5.75
				17	VIII	8.41
	N.W Sable Island		April 26	36	I	3.57
				15	VIII	5.87
Georges bank		September 8	43	IV-V	9.43	
Spring	St Georges Bay	April 10 th	26	V	5.40	
	Bay of Island	April 16 th	13	V	6.61	
	Bonne Bay	April 18	22	V	7.75	
	Martin Pte	April 18	15	V	5.70	
	N.W Sable Island	March 2	5	IV-V	12.80	
	N.W Sable Island	April 26	1	IV	6.00	

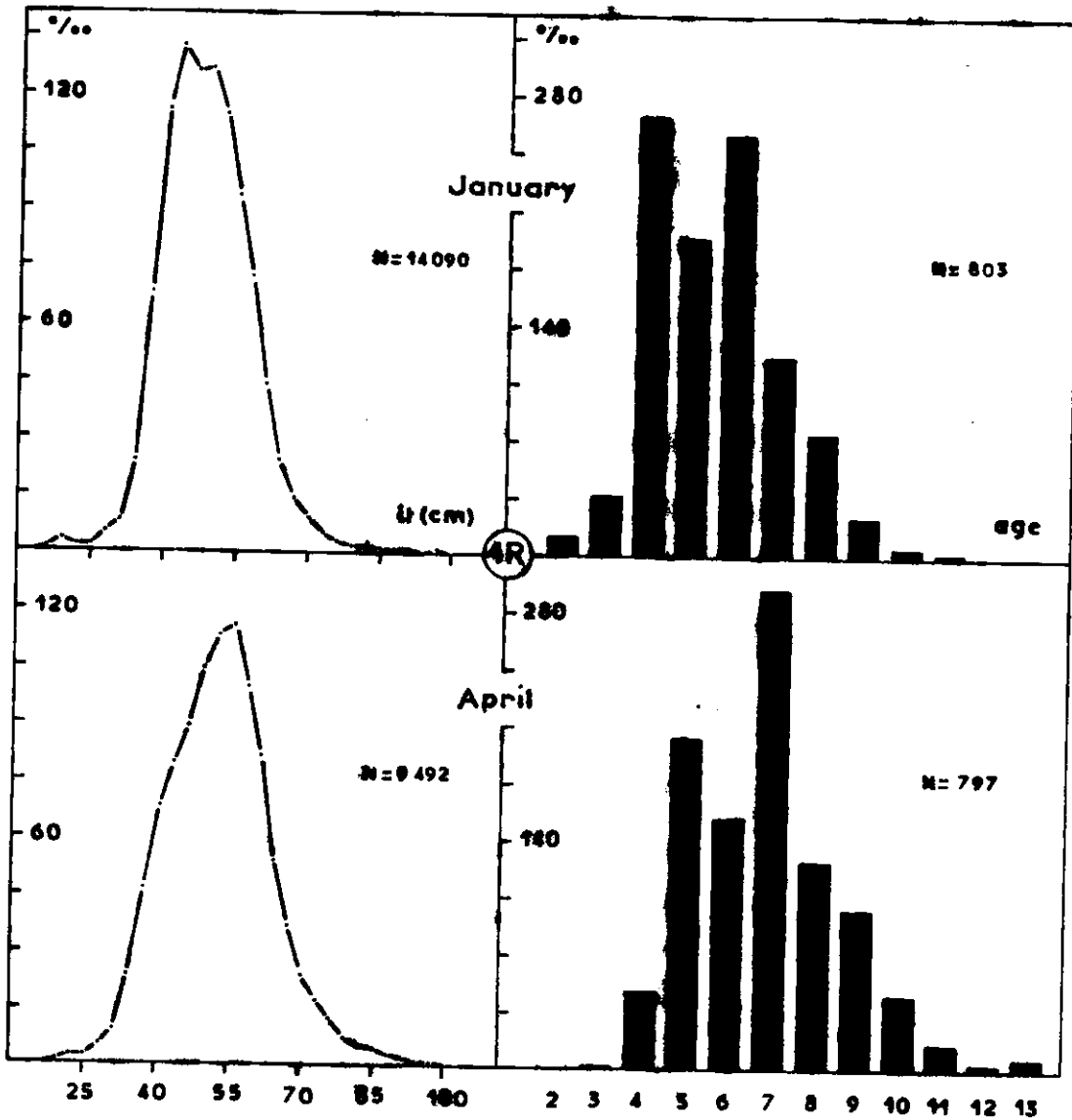


Fig. 1. Cod - length and age distributions in Div. 4R in January and April.

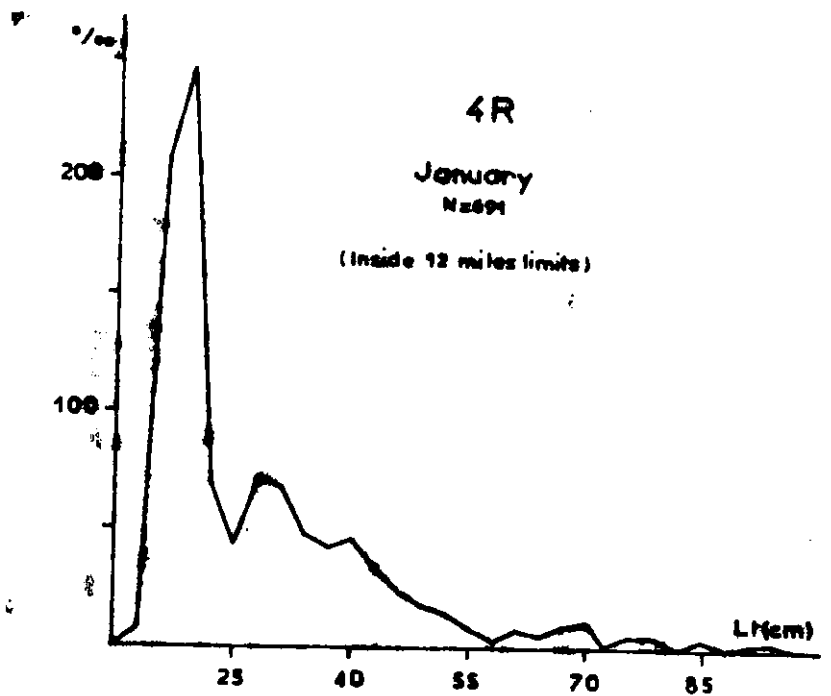


Fig. 2. Cod - length frequency of young cod inside 12-mile limit in January.

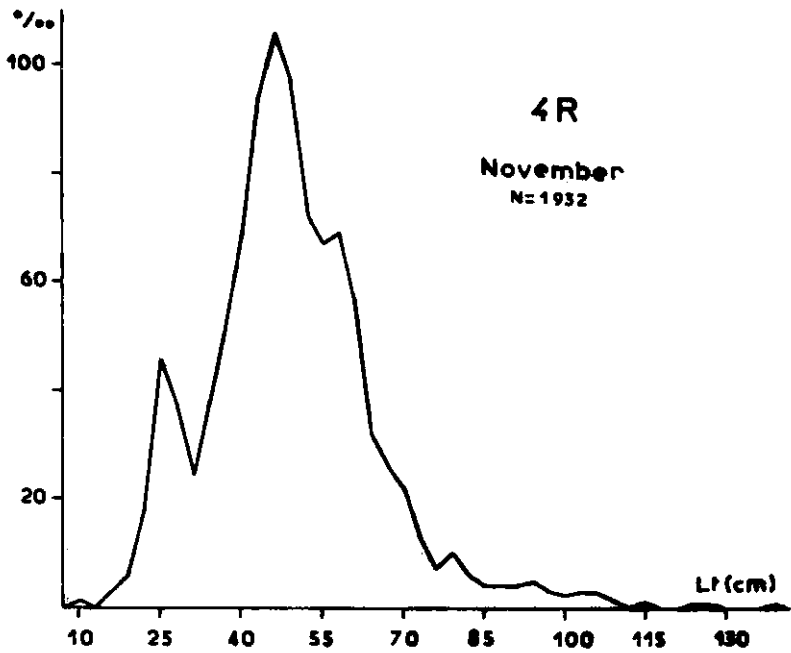


Fig. 3. Cod - length frequency of cod in Div. 4R in November.

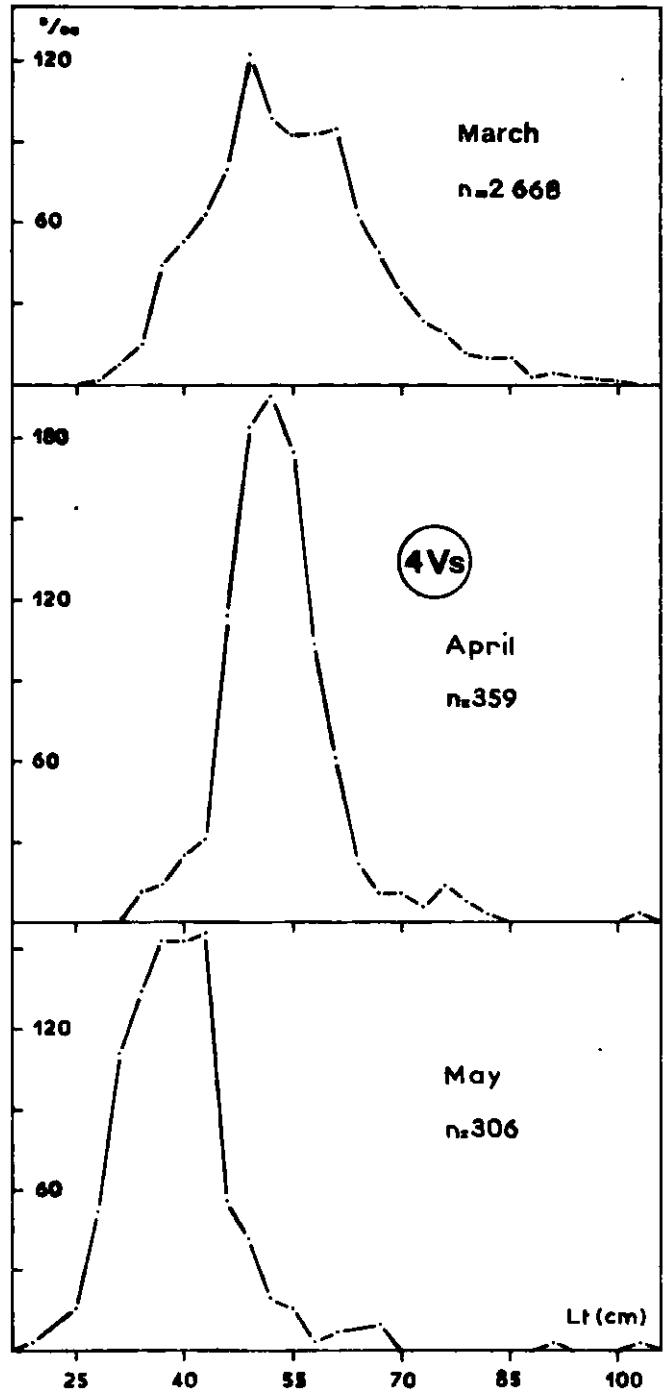


Fig. 4. Cod - size composition of cod in Subdiv. 4Vs.

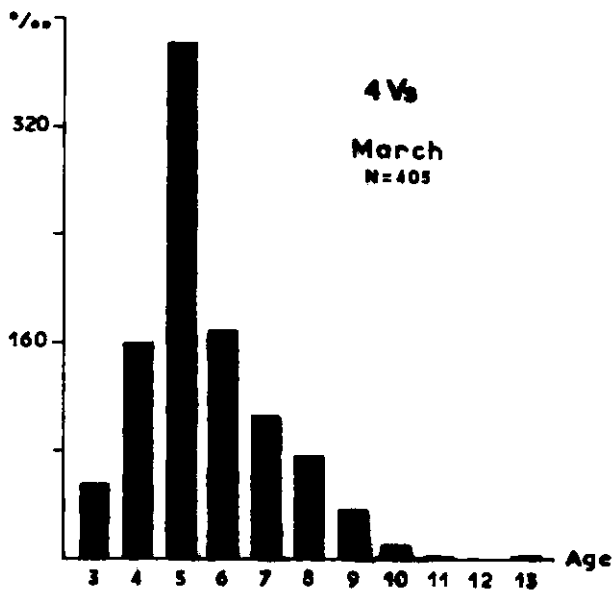


Fig. 5. Cod - age composition of cod in Subdiv. 4Vs in March.

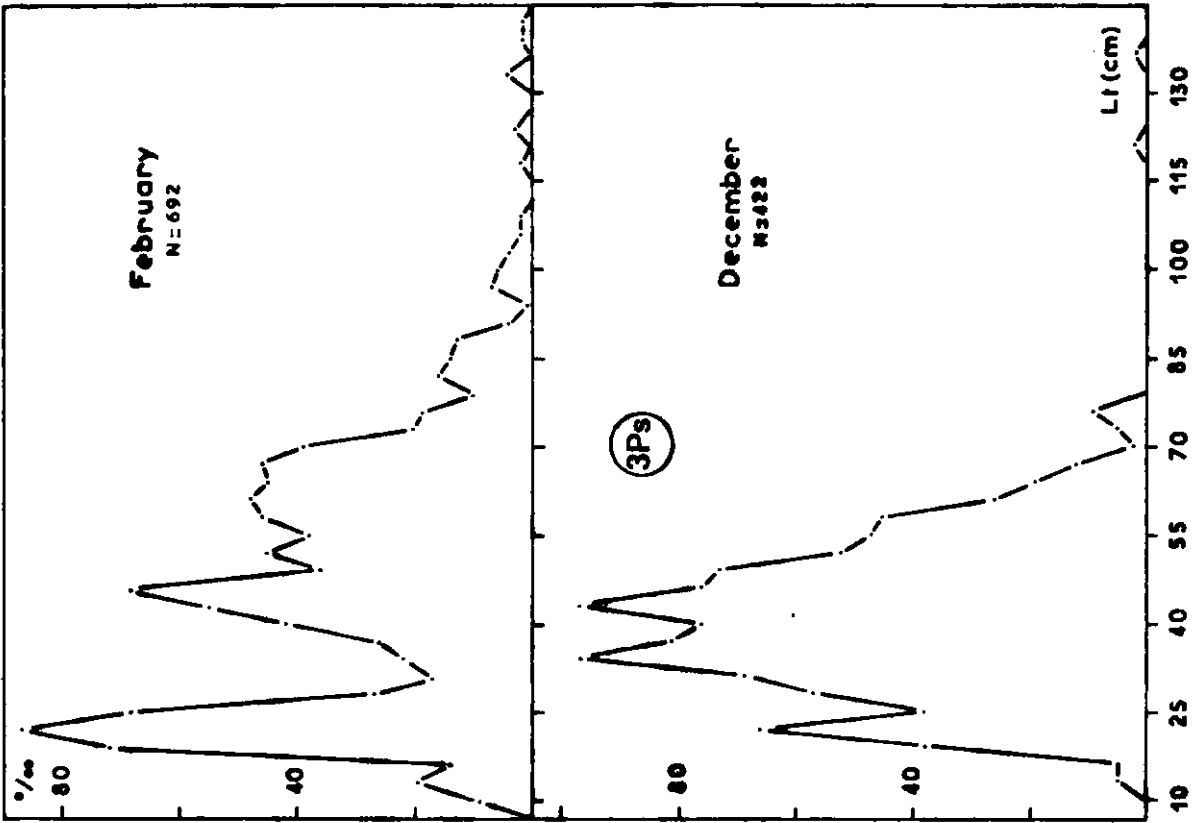


Fig. 7. Cod - length frequencies of cod in Subdiv. 3Ps.

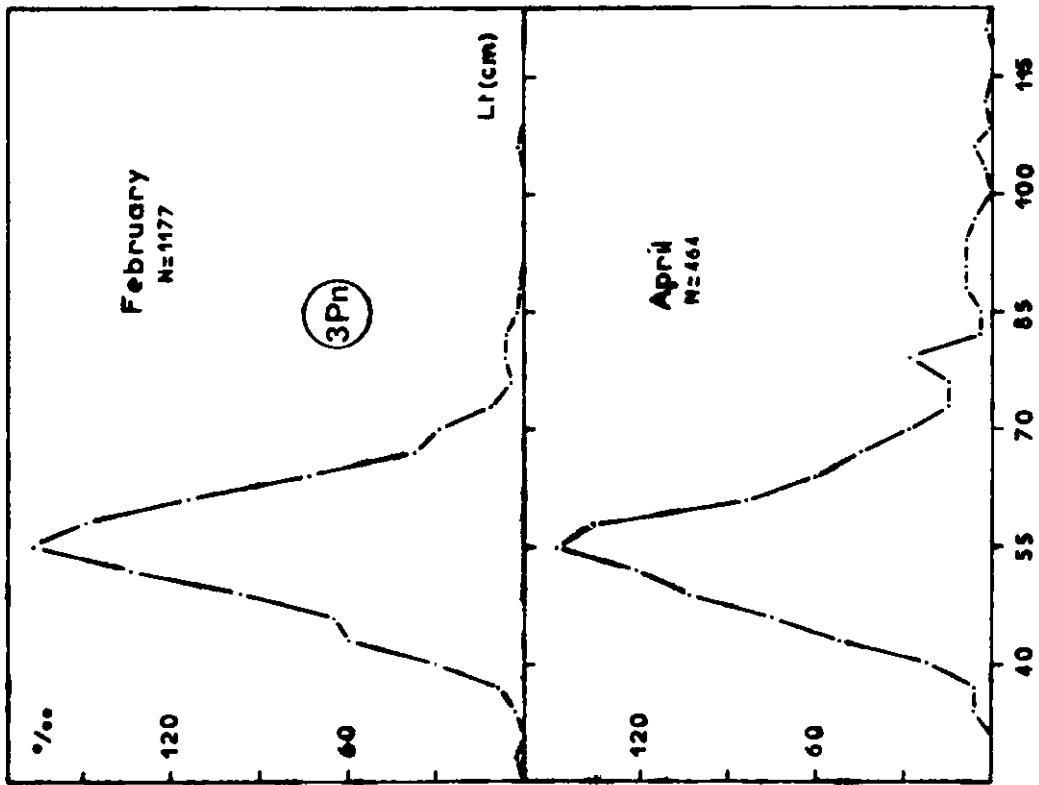


Fig. 6. Cod - length distribution of cod in Subdiv. 3Pn.

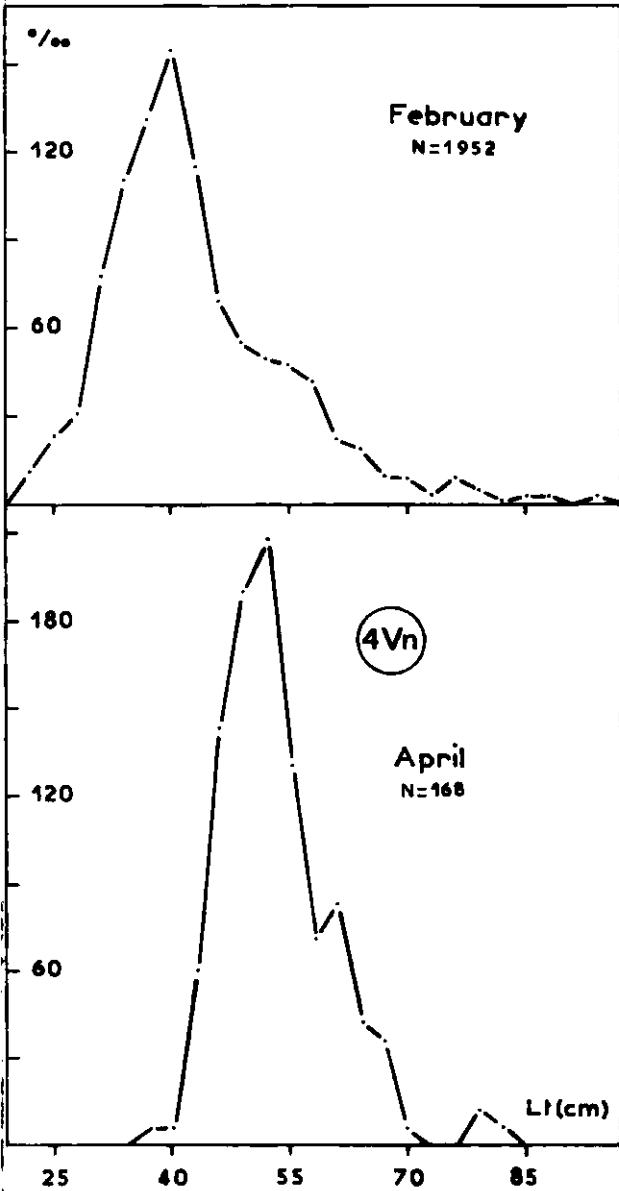


Fig. 8. Cod - length frequencies of cod in Subdiv. 4Vn.

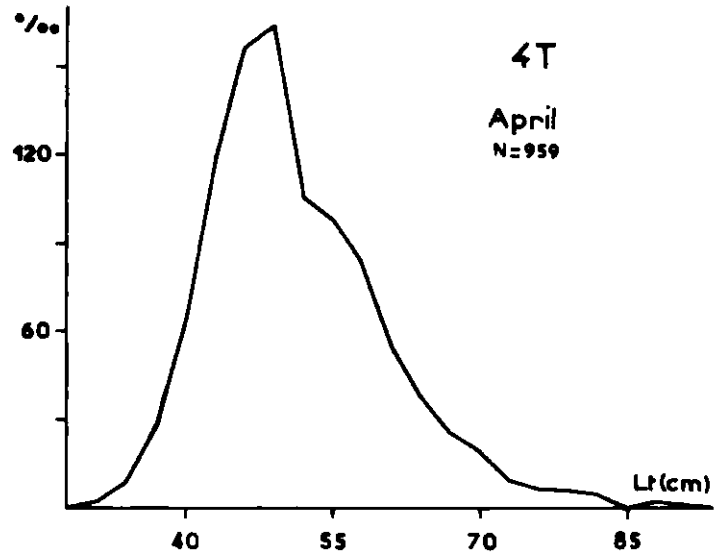


Fig. 9. Cod - length distribution of cod in Div. 4T.

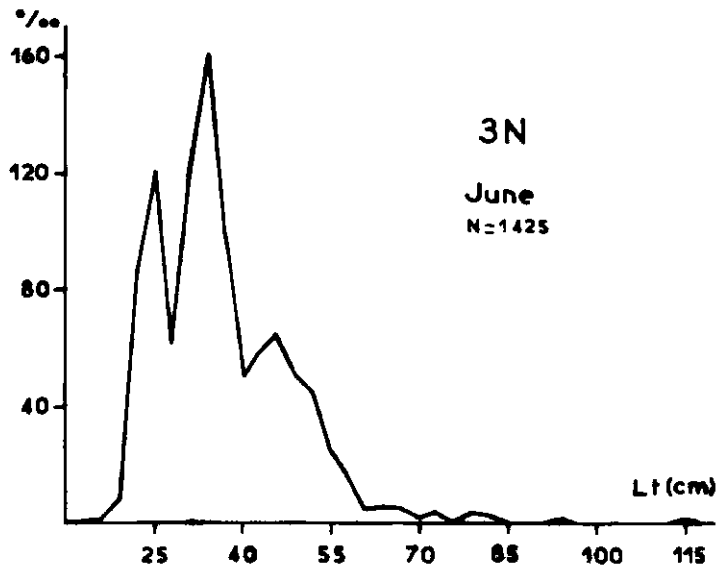
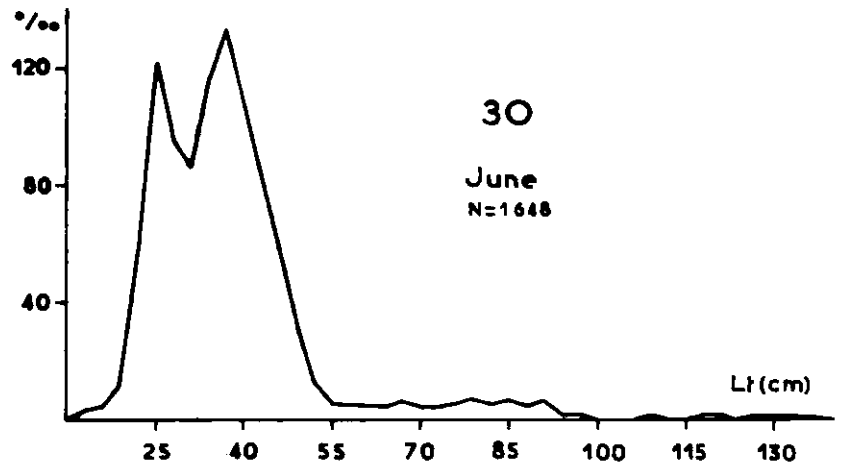


Fig. 10. Cod - size composition of cod in Div. 30 and 3N in June.

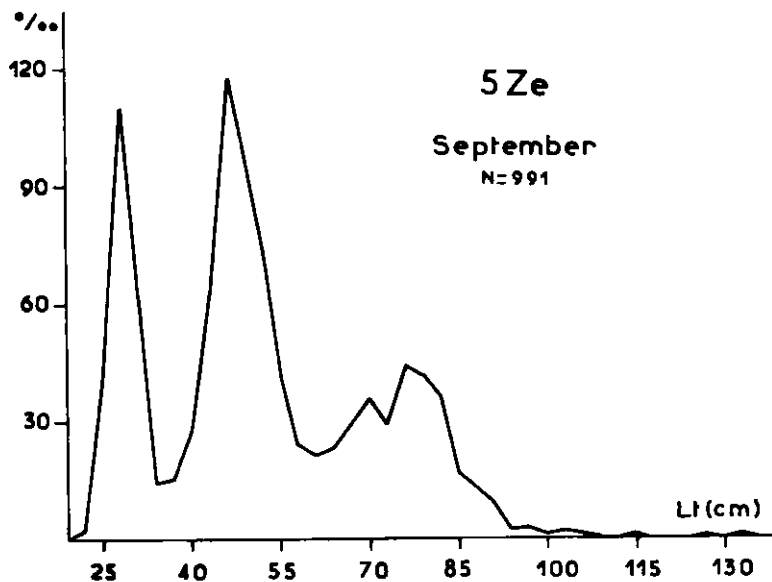


Fig. 11. Cod - length distribution of cod from Georges Bank in September.

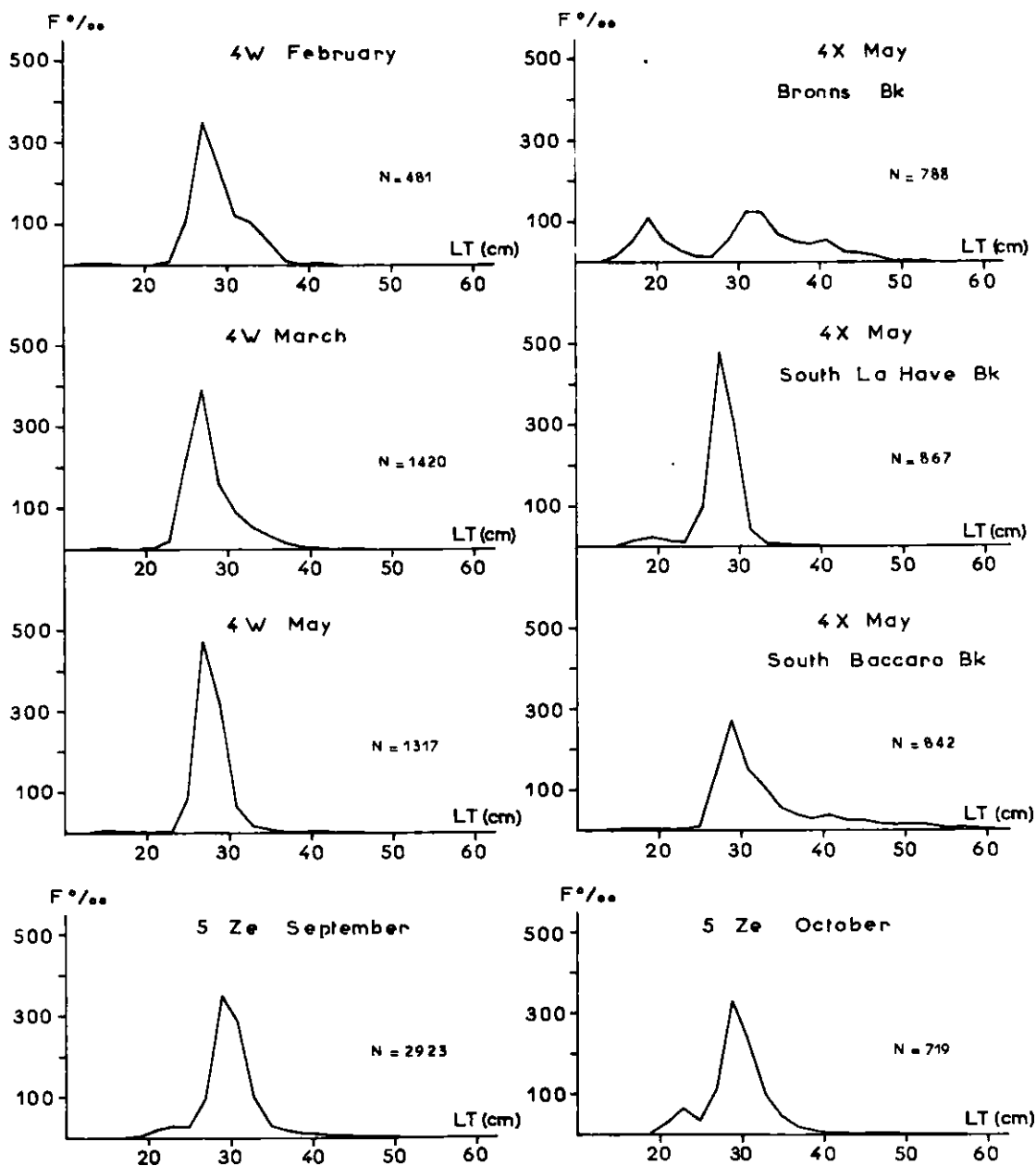


Fig. 12. Silver hake length frequencies.

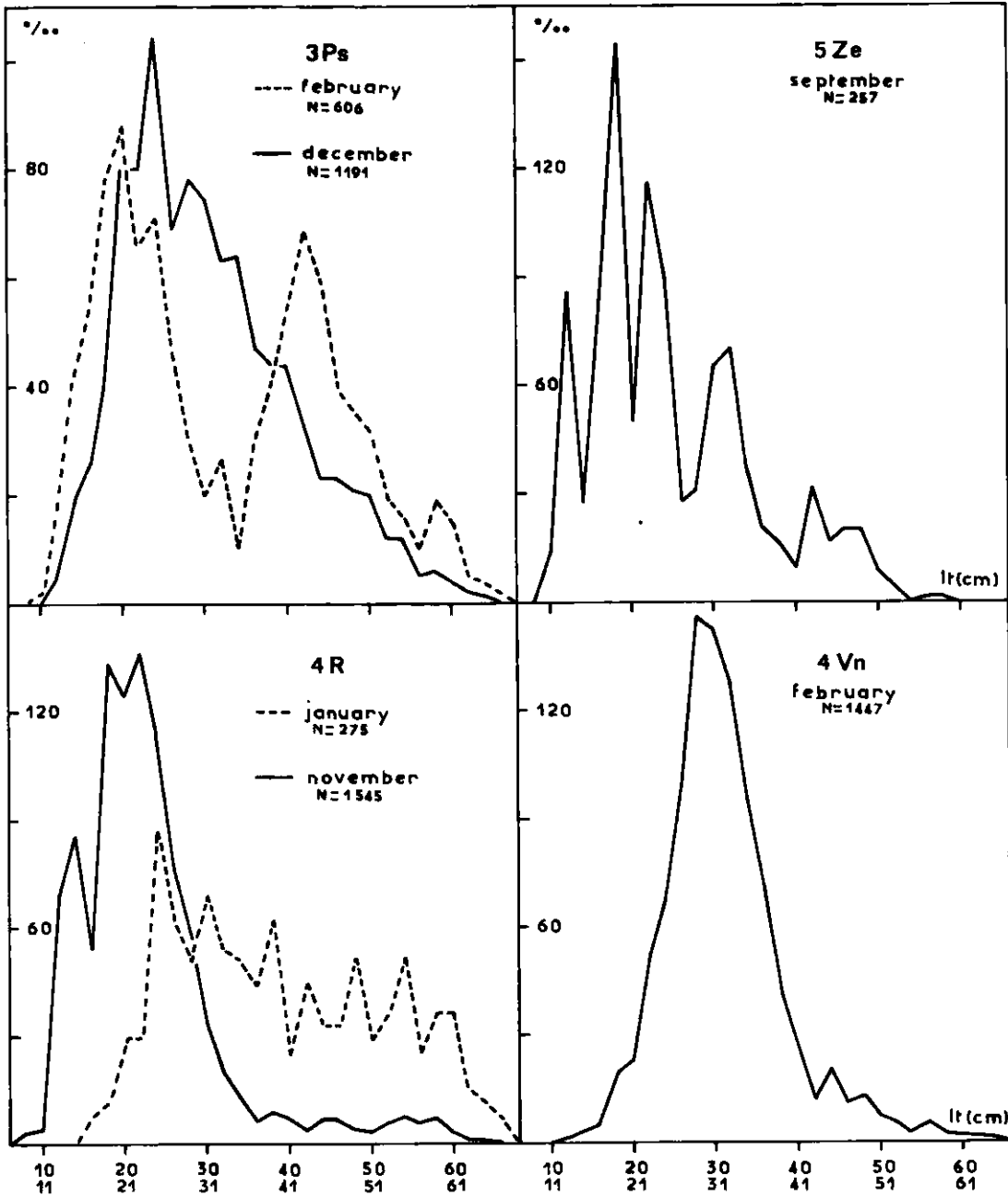


Fig. 13. American plaice length frequencies.

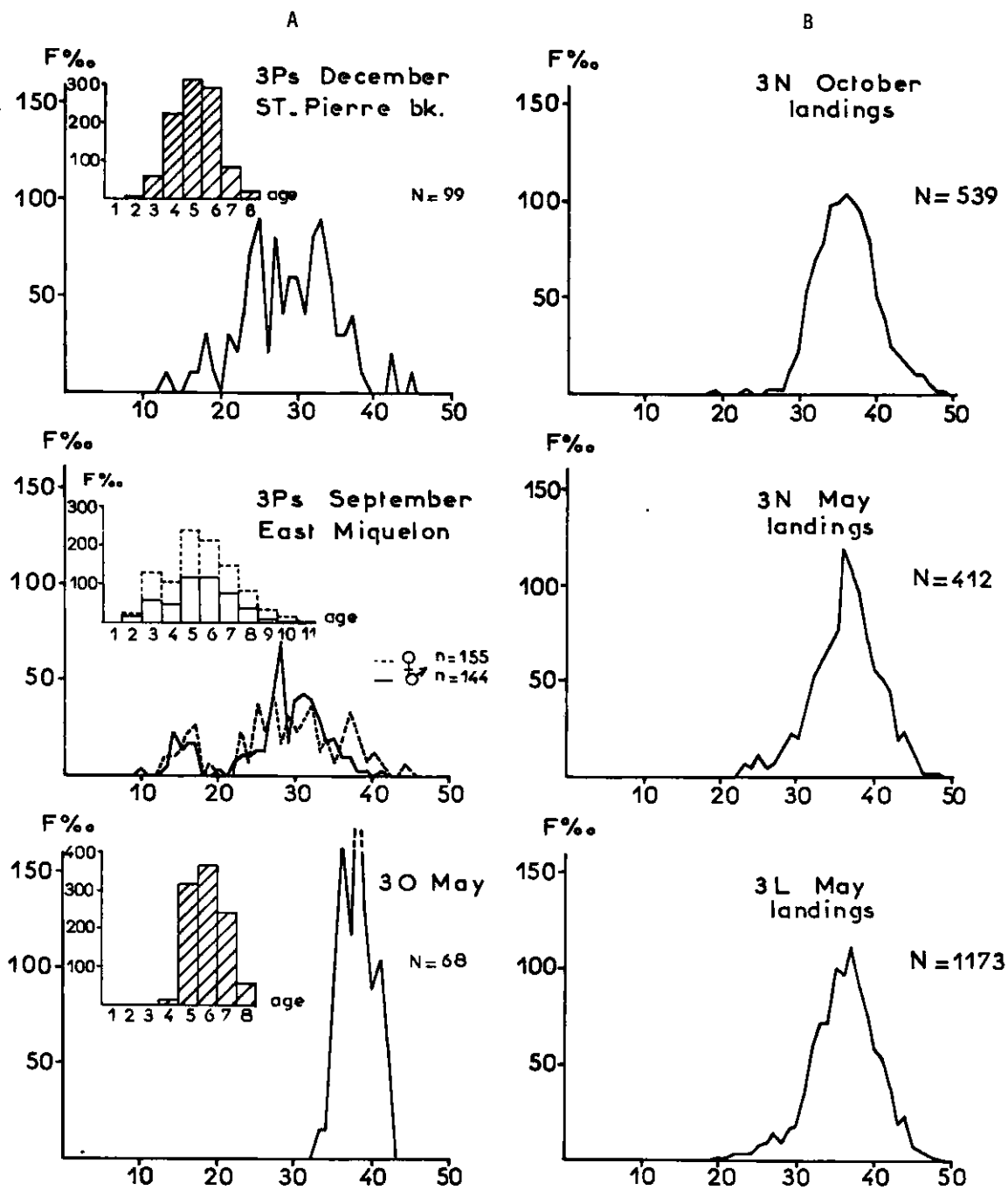


Fig. 14. Yellowtail. A - length and age frequencies of yellowtail in Subarea 3 (research). B - length frequencies of yellowtail in Subarea 3 (landings).

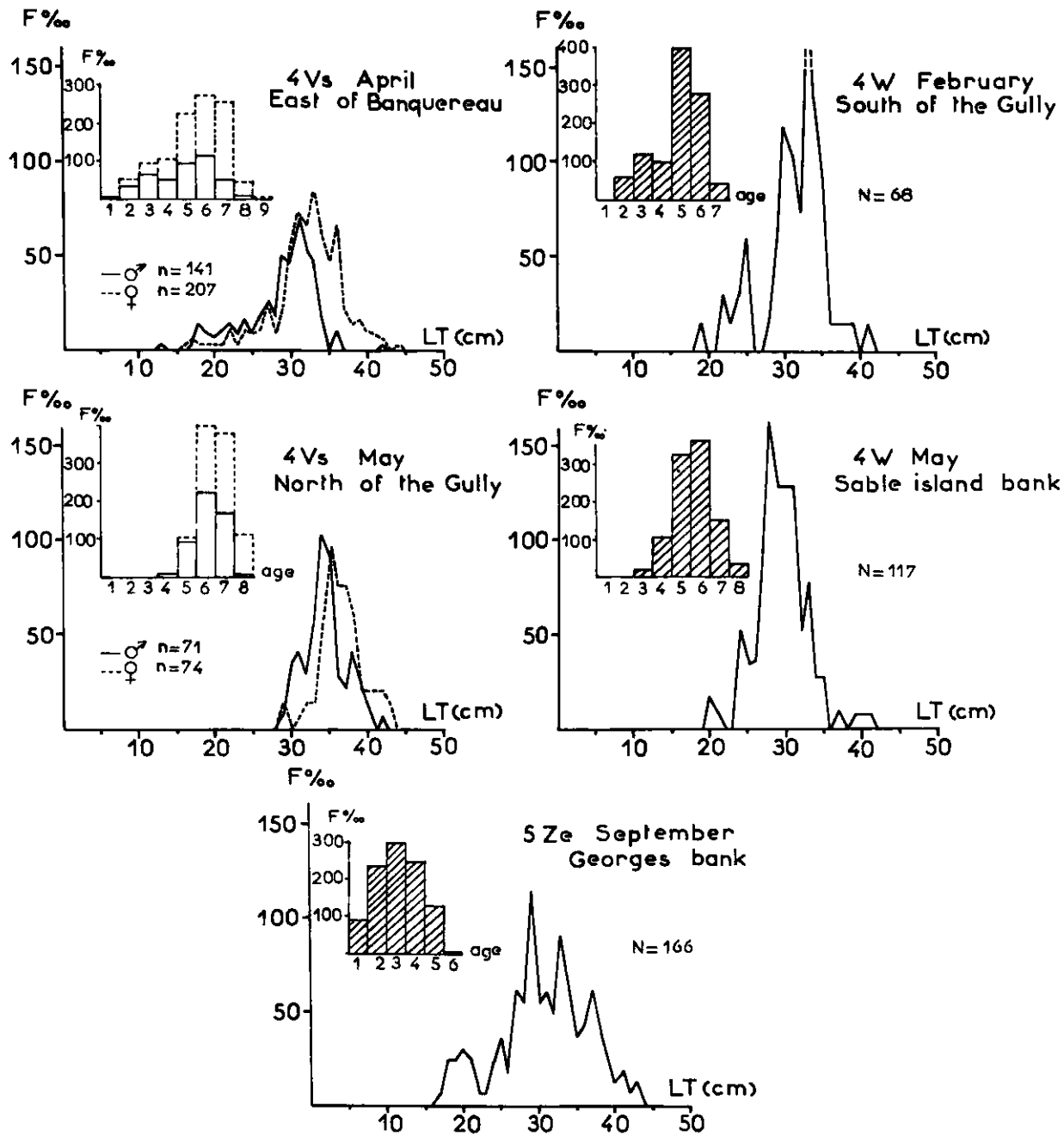


Fig. 15. Yellowtail length and age frequencies in Subareas 4 and 5 (research).

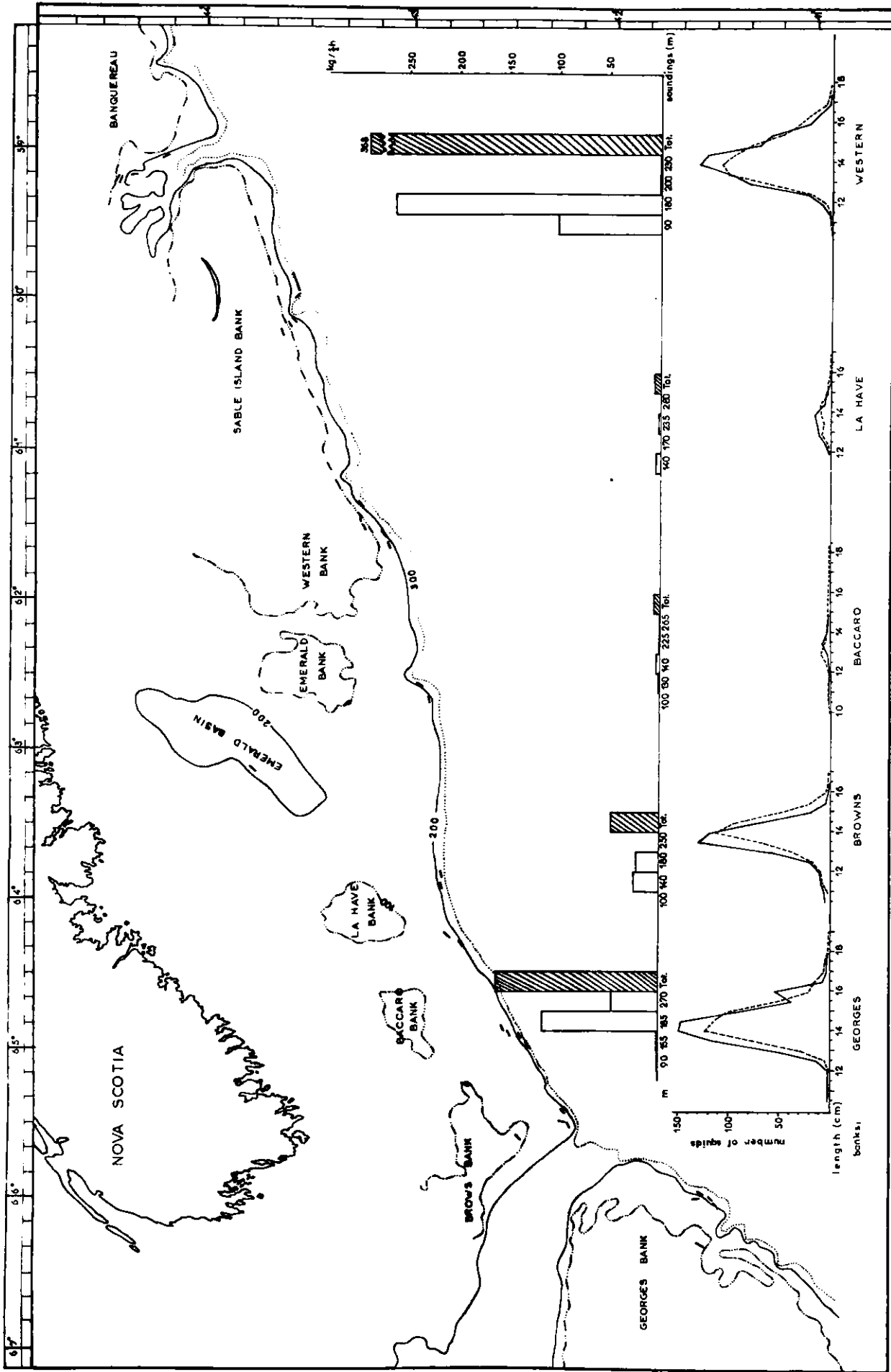


Fig. 16. Squid - stations, catches by half hour and size of squids of various areas (broken line: female; solid line: male).

