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Some observations on board two Spanish pair trawlers

by

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INTRODUCTION

Some observations made on board two commercial Spanish pair trawlers are summarized in this paper. These were carried out in 1973 during the months of January-March on Georges Bank (Subdiv. 5Ze), Banquereau (Subdiv. 4Vs) and Saint-Pierre Bank (Subdiv. 3Ps), and during August-September on the western coast of Greenland (Div. 1C and 1D).

The observations include some biological and biometrical data of the species which appeared as a by-catch of the directed cod fishery, as well as a relative estimation of the abundance of these species taken as a by-catch.

DESCRIPTION OF THE BOATS AND GEAR

In both cases, the fishing gear used was a 110 x 127 m bottom trawl with steel bobbins in the ground rope. The codend mesh size was 125 mm in Subdiv. 5Ze and 4Vs and 130 mm in Div. 1C and 1D. The gear was made of nylon. The average trawling time per day was 18.5 hours during the days when fishing operations were observed.

The vessels integrating the fishing unit are of the stern trawler type, 666 GRT and 1,550 HP, and both boats trawl only one gear.

RESULTS

Table 1 shows species, other than cod, caught in the different Divisions and Subdivisions, with a relative abundance scale in which the following criteria are used: no sign when the catch has been nil or at least not been observed; rare (-) when the catch consists of one or two individuals in no more than two hauls; present (+) when the species appears in some of the hauls but always represented by scarce individuals; common (++) when it appears in a great number of hauls but represented by few individuals; abundant (+++) when the catches are of a small commercial value; very abundant (++++) when the catches have commercial value.

Subdiv. 5Ze - Georges Bank

Permanence in this area has been from 1-20 February, operating during 16 days, in depths from 30 to 44 fm. Fig. 1 shows the area where the hauls were made.

The major part of the catch was cod. Length frequencies for cod in this area, including discards at sea, are shown in Table 2. The next species of economical importance was haddock (length data are shown in Table 3), followed by pollock.

Subdiv. 4Vn and 4Vs

Fishing operations were carried out in Subdiv. 4Vs from 24 February to 7 March in depths of 80-200 fm (Fig. 2). Most of the trawling operations were made in this Subdivision, but sometimes overlapped in Subdiv. 4Vn.

Haddock catches were scarce or nil. Pollock was more abundant than on Georges Bank, although the size was smaller (length frequencies are in Table 3).

In these Subdivisions, as well as on Georges Bank, night trawls have shown a larger amount of by-catch, mainly skates and flounders. A difference in cod catches has not been observed. There were no cod discards in this area.

Length data of redfish in this area are also shown in Table 3.

Subdiv. 3Ps

Only two hauls were made during March in this area, one south of St. Pierre Island, and the other at approximately 45°00'N - 55°30'W. Catches consisted only of *Glyptocephalus lumpus* in amounts of 8 and 15 tons each.

Div. 1C and 1D

Fishing operations were carried out during August and September in the following Banks: Tovqussaq (Div. 1C), Fyllas, Fiskanes and Danas (Div. 1D) (Fig. 3) in depths between 25 and 70 fm.

Catches were small and constituted mainly of cod, wolffish and American plaice. The variability in cod catches must be noted compared to that of wolffish and American plaice which is more constant. There were no cod discards in this area.

Length data for cod, Greenland cod, halibut, and American plaice are shown in Tables 2 and 3.

Length data of *Ammodytes americanus* and *Mallotus villosus* are shown in Table 5.

Stomach content data for cod (for several size groups), wolffish and American plaice are given in Table 4.

Table 1. By-catch of Spanish pair trawlers.

Species	5Za	4Vs	1C y 1D
Melanogrammus aeglefinus	+++	+	-
Pollachius virens	++	++	
Anarhichas lupus	++	++	++++
Anarhichas minor		+	+++
Anarhichas denticulatus			+++
Hippoglossus hippoglossus	++	++	++
Reinhardtius hippoglossoides			+
Sebastes marinus		++++	++
Limanda ferruginea	++	++	
Hippoglossoides platessoides	+++	+++	++++
Lophius americanus	++	-	
Merluccius bilinearis	+++		
Brosme brosme		+	
Urophycis tenuis	-	++	
Glyptocephalus cynoglossus		+++	
Gadus ogac			++
Mallotus villosus			++
Ammodytes americanus			+++
Argentina silus		+++	
Homerus americanus	++		
Clupea harengus harengus	+	-	
Raja sp.	+++	++++	+
Cyclopterus lumpus		++	+
Eumicrotremus spinosus			-
Alosa pseudoharengus	-		
Alosa sapidissima	-		
Myoxocephalus octodecemspinosus	++++		
Hemitripterus americanus	+++		
Macrozoarces americanus	++		
Helicolenus dactylopterus		-	
Squalus acanthias		-	
Nezumia bairdi		-	
Notacanthus nassus		-	
Molva sp.			-
Somniosus microcephalus			-
Centroscyllum fabricii		-	

no sign - null or no observations  
 - ; rare  
 + ; present  
 ++ ; common  
 +++ ; abundant  
 ++++ ; very abundant

Table 2  
\*\*\*\*\*

Length frequencies of Cod

tallas	division/month							
	5Ze		4Va		1C		1D	
	II	II	III	VIII	IX	VIII	IX	
27- 29				19				
30- 32	9			101	4			
33- 35	58	1	1	130	6			
36- 38	120	1	7	26	8	4	2	
39- 41	105	27	32	23	24	15	10	
42- 44	162	79	84	16	60	49	31	
45- 47	114	112	151	45	112	68	57	
48- 50	45	157	184	101	146	57	65	
51- 53	46	235	153	91	149	75	77	
54- 56	56	203	130	117	150	49	74	
57- 59	38	111	81	110	113	57	68	
60- 62	29	30	56	65	89	75	82	
63- 65	17	19	45	68	51	51	52	
66- 68	21	11	25	23	39	67	57	
69- 71	28	5	21	32	22	52	61	
72- 74	31	4	11	16	8	44	67	
75- 77	19	1	9	3	5	39	60	
78- 80	10	2	3	3	5	55	75	
81- 83	12	1	4		3	52	48	
84- 86	17		1	6	3	52	45	
87- 89	5		1	3	1	40	28	
90- 92	7					43	17	
93- 95	10		1		1	15	11	
96- 98	10					15	4	
99-101	4					12	3	
102-104	13					8	3	
105-107	9		1			3	3	
108-110	3						1	
111-113						4		
total	998	999	1001	998	999	1001	1001	
measured	2767	1614	1605	304	2490	749	3007	

Table 3. Length frequencies of by-catch species.

tallas	division (month)/species						
	5Ze(II)	4Ve (III)		1C-1D (IX)			
	Haddock	Pollock	Redfish	Halibut	Greenl. Cod	American plaice	
18- 19				4			
20- 21			1	13			
22- 23			5	17			1
24- 25			1	22			3
26- 27			5	13			7
28- 29			13	17			7
30- 31			14				6
32- 33			13	4			6
34- 35			18	9			6
36- 37		1	17				9
38- 39	5		10				14
40- 41		4				1	14
42- 43		8					11
44- 45	2	12			3		8
46- 47		14			3	2	5
48- 49	2	13			8	10	1
50- 51		13			12	14	
52- 53		8			22	10	
54- 55	2	8			11	13	
56- 57	5	7			9	18	
58- 59	2	6			9	13	
60- 61	12	1			6	14	
62- 63	7	2			8	1	
64- 65	2				2	3	
66- 67	7				2	1	
68- 69	10				3	1	
70- 71	7						
72- 73	14						
74- 75	7			1			
76- 77	5						
78- 79	2						
80- 81	5						
82- 83	2						
90- 91					1		
total	98	97	97	99	100	101	98
measured	42	83	97	23	65	94	867

Table 4. Stomach contents of cod, wolffish and American plaice in Div. 1C and 1D.

Preys	Cod			Wolffish	American plaice
	Less than 35 cm	35 to 90 cm	more than 90 cm		
Mallotus villosus		++	++	++	
Ammodytes americanus		+++	+++	+++	++
Crustaceans	+++	++	++		++
Gymnelis viridis		+			
Myoxocephalus sp.		+			
Anarhichas lupus			+		
Hippoglossoides platessoides			+	+	
Sebastes marinus			+		
Echinoderms					+

frecuencie: +++ high  
 ++ medium

Table 5. Length frequencies of capelin and *Ammodytes americanus* in Div. 1C and 1D, September.

<u>tallas</u>	<u>capelin</u>	<u>Ammodytes a.</u>
11	1	
12	2	
13	33	
14	35	1
15	20	1
16	4	3
17		4
18		6
19		16
20		23
21		18
22		15
23		10
24		3
25		1
26		
total	100	101
measured	135	430

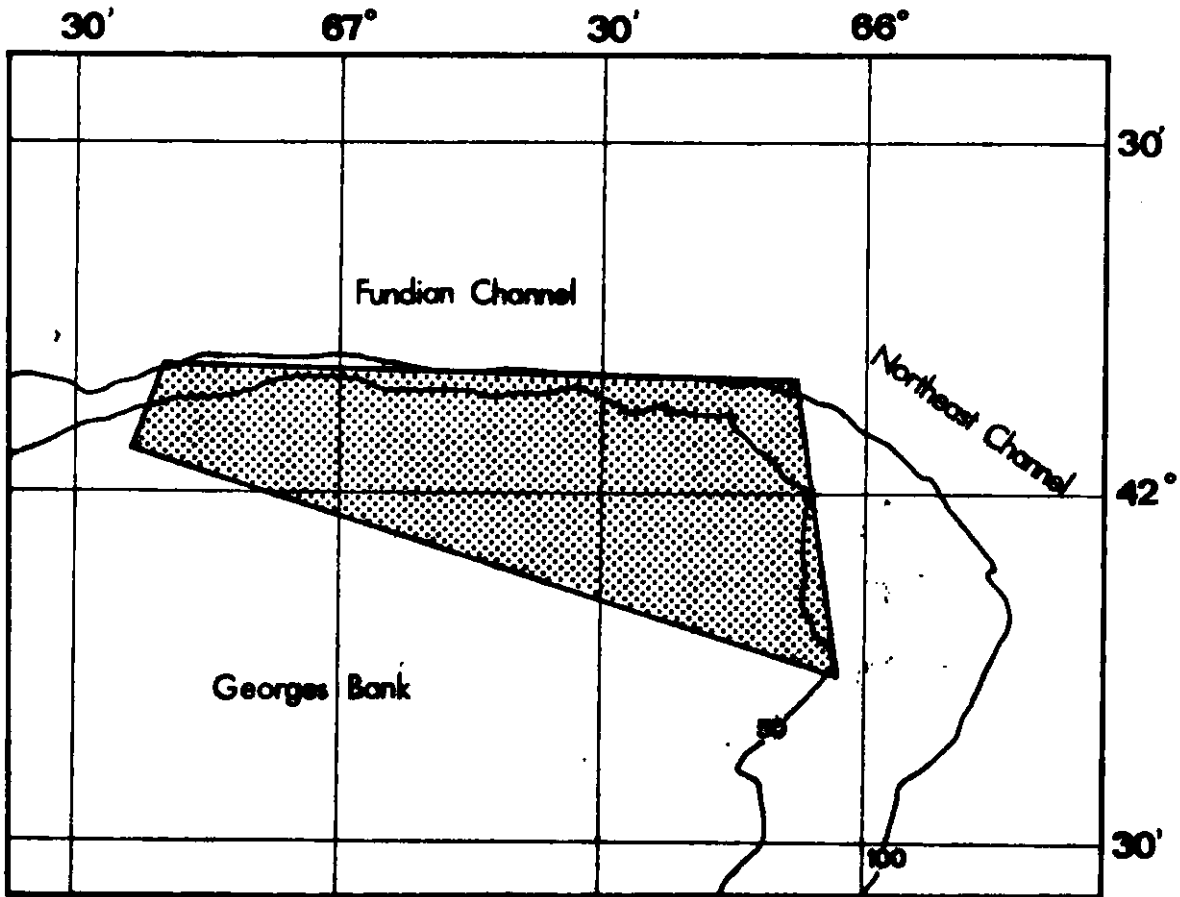


Fig. 1. Georges Bank (Subdiv. 5Ze) - hauls made in depths from 30 to 44 fm, 1-20 February 1973.

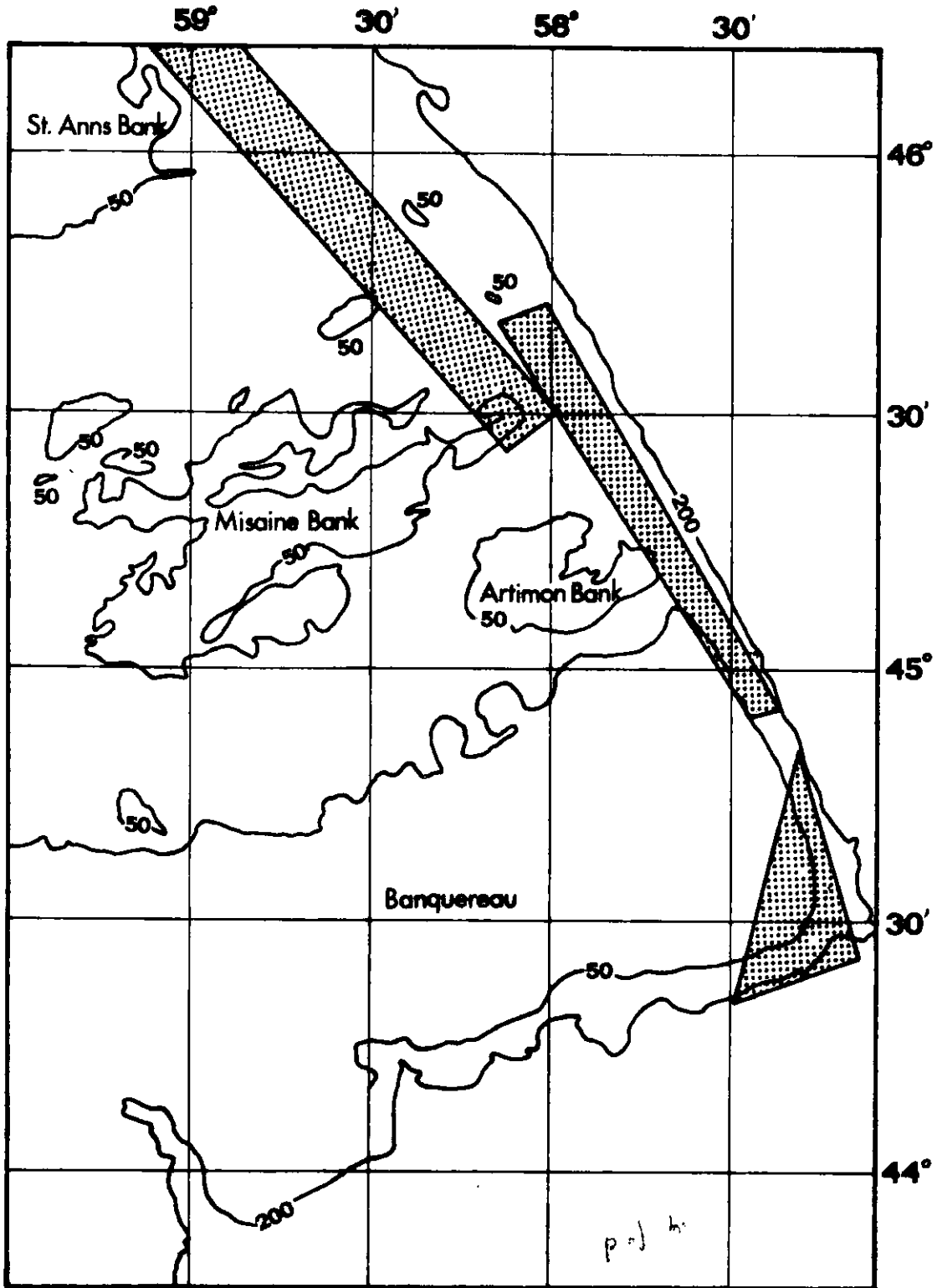


Fig. 2. Subdiv. 4Vs - fishing operations carried out in depths from 80 to 200 fm, 24 February-7 March 1973.

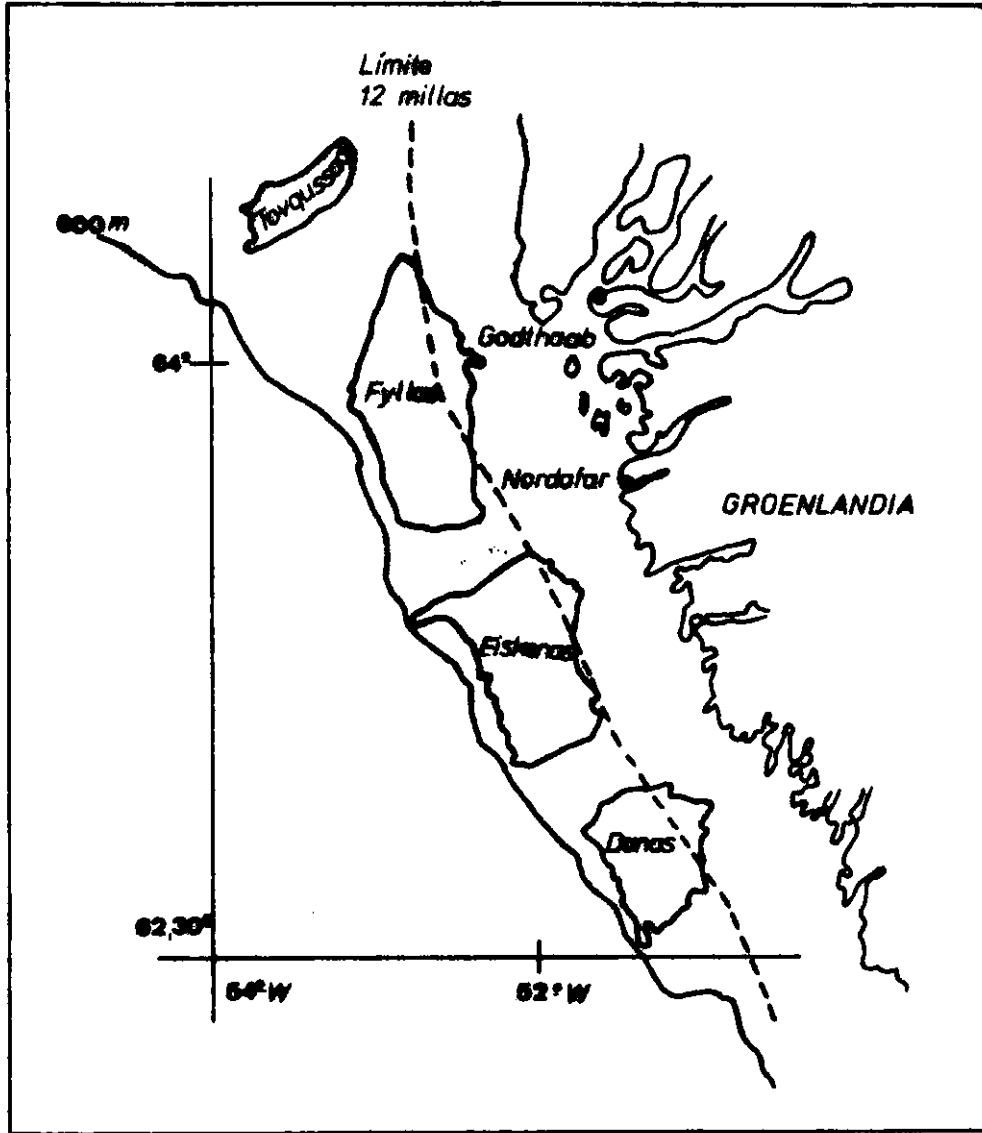


Fig. 3. Fishing operations carried out during August and September 1973 on Tovqussaq (Div. 1C), Fyllas, Fiskanes and Danas (Div. 1D) in depths between 25 and 70 fm.