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Groundfish trawl survey in the Newfoundland Area in 1973

by

V. A. Chekhova
Polar Research Institute of Marine
Fisheries and Oceanography (PINRO)
Murmansk, USSR

Abstract

Results of a groundfish trawl survey in the Newfoundland area in 1973 are compared with the data of 1971-1972. In 1973 there was a decrease in the abundance of cod in all areas investigated except Flemish Cap Bank. Beaked redfish, American plaice and yellowtail flounder were the most abundant commercial species.

Results of a regular annual trawl survey for groundfish are given in the present report. In 1973, as in the previous two years, investigations were conducted on board the R/V *Perseus III*. Hauls were made with a bottom trawl. A small-meshed nylon net (the knot-to-knot distance is 8 mm) was inserted into the trawl bag. Trouble-free hauls of one hour duration were taken into account.

In 1971-72 average catch for each fish species per hour trawling was calculated on the basis of number of hauls in which a given species was met with. In 1973 total weight and number of specimens of each species were attributed to all hauls that were made in a pre-determined range of depths. For comparison, data on determining the abundance of fish in 1971-1972 were recalculated and included in Tables 7 and 8.

Results of determining the abundance of groundfish in 1973 are summarized in Tables 1-6. On the basis of data presented it could be concluded that:

1. In 1973 abundance (number of specimens per hour trawling) and biomass (weight of fish per hour trawling) of white hake in Div. 30 and 3P decreased considerably compared with 1971 and remained at a lower level than in 1972.
2. Abundance of haddock on St. Pierre Bank (Div. 3P) increased significantly at the cost of recruitment with fishes 18-21 cm in length. In Div. 3N and 30, as in previous years, haddock abundance was at a very low level.
3. Abundance and biomass of cod decreased in all areas, except Flemish Cap Bank (Div. 3M), where abundance of cod increased at the cost of the young 27-32 cm long in 1973.
4. As in previous years, redfish were caught in quantity only on Flemish Cap Bank (Div. 3M). Their abundance and biomass increased compared with 1971 and decreased compared with 1972.
5. Abundance and biomass of beaked redfish increased on the southern slopes of the Newfoundland Grand (Div. 30, 3N and 3P) compared with 1972. However, they remained at a lower level than in 1971. Abundance and biomass decreased slightly on the North Newfoundland Bank (Div. 3K) compared with 1972, whereas they remained at the same level on Flemish Cap Bank (Div. 3M).
6. Abundance and biomass of American plaice increased in Div. 3K, 30 and 3P; no significant changes took place in the remaining divisions compared with 1972.
7. Abundance and biomass of yellowtail flounder decreased in Div. 3L and 3N, whereas they remained at the level of 1972 in Div. 30 and 3P.
8. Among other fishes, in 1973 common wolffish (Div. 3K, 3L and 3M) and thorny skate (Div. 3K, 3L, 3N, 30, 3P) were caught in commercial quantities.

Table 1. Average number of different fish species in the catch per hour trawling on the St. Pierre Bank on 1-7, and 14 June 1973.

Species	Depth (m)					
	0-100		101-200		201-300	
	No. of spec.	Mean length cm	No. of spec.	Mean length cm	No. of spec.	Mean length cm
<i>Squalus acanthias</i>	48.4	77.6	6.0	78.6	1.6	-
<i>Raja radiata</i>	28.4	43.9	23.0	52.6	3.0	79.3
<i>Urophycid chesteri</i>	-	-	-	-	1.7	-
<i>Urophycis tenuis</i>	-	-	5.5	58.0	5.0	51.2
<i>Melanogrammus aeglefinus</i>	-	-	549.0	19.8	6.0	19.4
<i>Gadus morhua</i>	7.0	52.2	50.7	31.8	23.4	29.8
<i>Anarhichas lupus</i>	0.1	-	0.8	-	-	-
<i>Anarhichas latifrons</i>	0.3	-	0.2	-	-	-
<i>Anarhichas minor</i>	-	-	0.1	-	-	-
<i>Lycodes sp.</i>	0.2	-	0.6	-	-	-
<i>Sebastes mentella</i>	-	-	606.0	19.6	3106.0	22.1
<i>Myoxocephalus aeneus</i>	40.4	27.7	2.0	31.1	-	-
<i>Hemitripterus americanus</i>	5.0	45.6	0.5	42.4	0.1	-
<i>Hippoglossus hippoglossus</i>	-	-	0.5	72.1	-	-
<i>Reinhardtius hippoglossoides</i>	-	-	0.6	16.5	0.5	-
<i>Hippoglossoides platessoides</i>	370.3	29.6	375.8	27.3	31.4	27.9
<i>Limanda ferruginea</i>	185.5	34.1	0.5	42.1	0.9	38.5
<i>Glyptocephalus cynoglossus</i>	0.7	40.8	53.2	35.9	24.0	35.9
Number of Hauls	11		21		7	

Table 2. Average number of different fish species in the catch per hour trawling on the southwestern slope of the Newfoundland Grand Bank on 8-24 June 1973.

Species	Depth (m)					
	0-100		101-200		201-300	
	No. of spec.	Mean length cm	No. of spec.	Mean length cm	No. of spec.	Mean length cm
<i>Raja radiata</i>	7.0	49.5	33.0	63.6	4.0	72.8
<i>Raja senta</i>	0.2	-	0.7	45.2	0.4	-
<i>Urophycid chesteri</i>	-	-	0.2	-	2.7	25.7
<i>Urophycis tenuis</i>	0.1	-	12.4	60.3	7.0	74.1
<i>Melanogrammus aeglefinus</i>	0.1	-	11.0	27.0	3.0	-
<i>Gadus morhua</i>	46.0	33.4	79.0	32.1	3.7	25.1
<i>Lycodes sp.</i>	0.5	-	0.6	-	0.1	-
<i>Sebastes mentella</i>	0.6	12.2	1254.0	18.6	3236.0	20.6
<i>Myoxocephalus aeneus</i>	3.0	25.4	-	-	-	-
<i>Hemitripterus americanus</i>	0.8	42.8	-	-	-	-
<i>Hippoglossoides platessoides</i>	299.0	33.5	279.0	27.2	41.4	32.9
<i>Limanda ferruginea</i>	256.0	34.3	1.0	37.6	-	-
<i>Glyptocephalus cynoglossus</i>	7.6	43.0	10.5	36.4	7.0	35.3
Number of Hauls	32		22		8	

Table 3. Average number of different fish species in the catch per hour trawling on the southeastern slope of the Newfoundland Grand Bank on 30 June-11 July 1973.

Species	Depth (m)							
	0-100		101-200		201-300		301-400	
	No. of spec.	Mean length cm	No. of spec.	Mean length cm	No. of spec.	Mean length cm	No. of spec.	Mean length cm
<i>Raja radiata</i>	9.3	39.5	41.0	39.2	16.0	34.2	1.4	76.0
<i>Raja senta</i>	1.0	-	0.8	-	0.3	-	-	-
<i>Notacanthus macrorhynchus</i>	-	-	-	-	0.4	-	-	-
<i>Pollachius virens</i>	0.1	-	-	-	-	-	-	-
<i>Melanogrammus aeglefinus</i>	-	-	1.0	20.0	-	-	-	-
<i>Gadus morhua</i>	96.0	35.6	115.5	40.6	241.0	39.9	-	-
<i>Nezumia bairdii</i>	-	-	0.1	-	1.0	27.3	34.0	30.0
<i>Nezumia bergalax</i>	-	-	0.2	52.0	-	-	4.5	55.7
<i>Nezumia rupestris</i>	-	-	-	-	2.0	64.9	-	-
<i>Anarhichas latifrons</i>	0.2	-	-	-	0.4	-	0.5	-
<i>Anarhichas lupus</i>	-	-	0.1	-	3.6	48.7	3.0	-
<i>Anarhichas minor</i>	-	-	0.3	-	0.1	-	0.5	-
<i>Lycodes sp.</i>	0.1	-	0.7	-	4.0	35.2	9.5	33.2
<i>Sebastes mentella</i>	-	-	468.6	12.6	1730.0	23.5	5718.5	27.6
<i>Myoxocephalus aeneus</i>	8.7	26.7	0.1	-	-	-	-	-
<i>Hemirhamphus americanus</i>	1.3	43.8	-	-	-	-	-	-
<i>Hippoglossus hippoglossus</i>	-	-	0.1	-	-	-	-	-
<i>Hippoglossoides platessoides</i>	263.0	32.0	245.0	37.5	471.0	40.1	2.0	-
<i>Limanda ferruginea</i>	461.0	35.5	-	-	-	-	-	-
<i>Glyptocephalus cynoglossus</i>	0.3	46.9	3.0	43.4	5.0	40.8	48.0	38.4
<i>Macrozoarces americanus</i>	0.1	-	-	-	0.1	-	-	-
Number of Hauls	37		12		8		2	

Table 4. Average number of different fish species in the catch per hour trawling on Flemish Cap Bank on 15-18 July 1973.

Species	Depth (m)					
	101-200		201-300		301-400	
	No. of spec.	Mean length cm	No. of spec.	Mean length cm	No. of spec.	Mean length cm
<i>Raja radiata</i>	0.1	-	0.2	-	-	-
<i>Raja senta</i>	-	-	0.1	-	-	-
<i>Urophycis chesteri</i>	0.1	-	1.0	19.9	8.0	24.4
<i>Melanogrammus aeglefinus</i>	1.5	-	0.2	-	-	-
<i>Gadus morhua</i>	194.5	33.5	91.0	33.6	25.0	58.0
<i>Nezumia bairdii</i>	-	-	-	-	1.0	28.0
<i>Anarhichas lupus</i>	33.1	27.2	17.2	31.9	13.0	37.8
<i>Anarhichas latifrons</i>	-	-	0.3	-	3.7	-
<i>Anarhichas minor</i>	1.7	-	2.0	-	6.0	-
<i>Lycodes sp.</i>	-	-	-	-	6.3	29.5
<i>Sebastes mentella</i>	-	-	43.4	26.4	2805.0	27.1
<i>Sebastes marinus</i>	318.5	29.7	228.6	33.9	25.0	41.9
<i>Hippoglossoides platessoides</i>	117.0	40.9	31.2	41.1	18.3	38.2
<i>Glyptocephalus cynoglossus</i>	0.8	-	0.6	-	0.6	-
Number of Hauls	6		10		3	

Table 5. Average number of different fish species in the catch per hour trawling on the northeastern slope of the Newfoundland Grand Bank on 20-30 July 1973.

Species	Depth (m)							
	0-100		101-200		201-300		301-400	
	No. of spec.	Mean length cm	No. of spec.	Mean length cm	No. of spec.	Mean length cm	No. of spec.	Mean length cm
<i>Raja radiata</i>	10.0	44.4	23.0	32.4	37.0	29.3	8.0	58.0
<i>Raja senta</i>	0.4	-	-	-	-	-	-	-
<i>Gadus morhua</i>	7.4	39.7	27.0	42.3	44.5	45.5	8.2	45.7
<i>Nezumia bairdii</i>	-	-	-	-	0.2	-	0.4	-
<i>Nezumia berglax</i>	-	-	-	-	0.8	50.3	19.2	51.2
<i>Anarhichas lupus</i>	-	-	0.8	44.0	23.1	39.3	22.6	36.8
<i>Anarhichas latifrons</i>	-	-	0.2	-	1.3	-	0.8	-
<i>Anarhichas minor</i>	-	-	1.0	79.8	4.0	50.0	2.4	40.8
<i>Lycodes sp.</i>	2.1	39.6	10.0	38.4	36.9	35.5	15.4	32.4
<i>Sebastes mentella</i>	-	-	-	-	168.0	22.8	542.0	31.5
<i>Myoxocephalus aeneus</i>	0.4	-	-	-	-	-	0.2	-
<i>Hippoglossus hippoglossus</i>	-	-	0.1	-	0.7	16.2	3.2	12.6
<i>Reinhardtius hippoglossoides</i>	-	-	1.4	34.7	9.6	37.2	36.0	39.2
<i>Hippoglossoides platessoides</i>	217.4	30.6	765.0	25.9	564.6	27.6	52.2	29.1
<i>Limanda ferruginea</i>	100.0	34.9	0.2	37.5	-	-	-	-
<i>Glyptocephalus cynoglossus</i>	0.3	51.0	3.0	49.5	3.8	50.7	10.8	45.8
Number of Hauls	14		22		20		5	

Table 6. Average number of different fish species per hour trawling on the North Newfoundland Bank on 31 July-26 August 1973.

Species	Depth (m)					
	101-200		201-300		301-400	
	No. of spec.	Mean length cm	No. of spec.	Mean length cm	No. of spec.	Mean length cm
<i>Raja radiata</i>	18.0	-	15.4	27.4	3.0	39.4
<i>Raja senta</i>	-	-	1.0	38.3	0.7	29.9
<i>Urophycis chuss</i>	-	-	0.04	-	-	-
<i>Gadus morhua</i>	30.0	44.6	28.2	45.2	58.3	42.2
<i>Nezumia bairdii</i>	-	-	-	-	0.5	-
<i>Nezumia berglax</i>	-	-	0.2	-	2.1	48.9
<i>Anarhichas lupus</i>	11.0	36.7	23.5	38.0	10.2	39.0
<i>Anarhichas latifrons</i>	1.0	-	0.5	87.5	1.0	82.0
<i>Anarhichas minor</i>	4.0	-	1.1	68.8	0.8	64.0
<i>Lycodes sp.</i>	37.0	33.2	29.5	30.9	14.3	33.3
<i>Sebastes mentella</i>	-	-	64.0	26.8	1052.0	27.8
<i>Sebastes marinus</i>	-	-	56.0	27.9	46.0	35.7
<i>Myoxocephalus aeneus</i>	-	-	0.2	-	-	-
<i>Reinhardtius hippoglossoides</i>	63.0	43.8	39.4	38.5	58.2	32.7
<i>Hippoglossoides platessoides</i>	212.0	32.5	200.0	24.5	97.3	27.2
<i>Glyptocephalus cynoglossus</i>	3.0	-	4.9	52.3	9.0	40.6
<i>Paralepis rissoi</i>	-	-	-	-	0.04	-
<i>Macroscorces americanus</i>	-	-	-	-	0.1	-
Number of Hauls	1		25		22	

Table 7. Average number of different fish species per hour trawling in Subarea 3 in 1971-1973 (in specimens).

Species	Year	Divisions					
		3K	3L	3M	3N	3O	3P
<i>Raja radiata</i>	1972	-	29	-	43	15	17
	1973	9	25	-	36	16	21
<i>Urophycis tenuis</i>	1971	-	-	-	-	130	61
	1972	-	-	-	1	20	6
	1973	-	-	-	-	5	4
<i>Melanogrammus aeglefinus</i>	1972	-	-	-	10	10	16
	1973	-	-	-	-	4	1156
<i>Gadus morhua</i>	1971	249	411	77	226	44	186
	1972	158	205	66	139	56	145
	1973	41	29	108	134	53	34
<i>Sebastes marinus</i>	1971	34	-	93	-	-	-
	1972	15	11	409	-	-	-
	1973	45	-	214	-	-	-
<i>Sebastes mentella</i>	1971	292	82	66	1298	214	1459
	1972	612	37	449	366	498	654
	1973	475	113	484	645	884	884
<i>Myoxocephalus aeneus</i>	1972	-	2	-	3	5	9
	1973	-	-	-	9	-	12
<i>Hippoglossoides platessoides</i>	1971	94	778	64	333	360	334
	1972	74	516	41	387	167	213
	1973	142	569	55	277	278	316
Survey period	1971	Jul-Aug	Jul	May	Jun-Jul	May-Jun	May
	1972	Jun-Jul	Jun	Apr	Apr	Apr-May	May
	1973	Jul-Aug	Jul	Jul	Jun-Jul	Jun	Jun
<i>Limanda ferruginea</i>	1971	-	211	-	550	547	218
	1972	-	126	-	326	128	44
	1973	-	31	-	206	122	52
Survey period	1971	Jul-Aug	Jul	May	Jun-Jul	May-Jun	May
	1972	Jun-Jul	Jun	Apr	Apr	Apr-May	May
	1973	Jul-Aug	Jul	Jul	Jun-Jul	Jun	Jun

Table 8. Average catch of different fish species per hour trawling in Subarea 3 in 1971-1973 (in kg).

Species	Year	Divisions					
		3K	3L	3M	3N	3O	3P
<i>Raja radiata</i>	1972	-	19	-	55	34	23
	1973	4	27	-	53	47	47
<i>Urophycis tenuis</i>	1971	-	-	-	-	347	-
	1972	-	-	-	4	33	11
	1973	-	-	-	-	7	4
<i>Melanogrammus aeglefinus</i>	1972	-	-	-	1	3	8
	1973	-	-	-	-	1	40
<i>Gadus morhua</i>	1971	216	337	68	150	34	67
	1972	134	163	75	72	67	76
	1973	33	19	46	47	18	10
<i>Sebastes marinus</i>	1971	31	-	85	-	-	-
	1972	21	11	334	-	-	-
	1973	24	-	141	-	-	-
<i>Sebastes mentella</i>	1971	125	33	12	246	24	139
	1972	266	16	194	43	62	77
	1973	150	38	117	161	114	148
<i>Myoxocephalus aeneus</i>	1972	-	0.3	-	1	1	2
	1973	-	-	-	2	-	6
<i>Hippoglossoides platessoides</i>	1971	29	304	43	214	140	125
	1972	9	132	22	117	42	29
	1973	56	111	37	107	77	60
<i>Limanda ferruginea</i>	1971	-	100	-	145	188	102
	1972	-	57	-	140	46	19
	1973	-	12	-	76	50	19