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Romanian Research Report for 1979

by

Cornelia Maxim, Constantin Maxim, and Ionel Staicu  
Institutul Roman de Cercetari Marine  
Constanta, Romania

#### INTRODUCTION

The total catch taken by the Romanian fleet in the NAFO Area was 2,663 tons in 1979, a further substantial decline from 4,132 tons in 1978 (Table 1) and 5,432 tons in 1977. Thus the catch declined by more than 35% from that in 1978 and 50% from that in 1977. Capelin (846 tons), squid-*Illex* (832 tons) and redfish (677 tons) constituted most of the total catch, the quantities of other species being insignificant. The greatest decline (70%) occurred in the capelin fishery. The percentages of the various species caught are given in Table 1.

The decrease in Romanian catches in the NAFO Area was mainly due to three factors: (a) lower catch quotas allocated to Romania for 1979 and the contraction of fishery licence periods, especially for the capelin fishery; (b) strong mixture of capelin and Arctic cod fry off southern Labrador; and (c) the new fishery regulations in Subareas 5 and 6 ("windows" and closed seasons) which changed the effort distribution of the Romanian fleet. The first and second factors contributed mostly to catches being much lower than quotas in Subarea 2 and Div. 3K, while the third factor contributed to much lower catches in Subareas 5 and 6. The percentage utilization of Romanian quotas is given in Table 2.

The main species caught in 1979 were capelin, squid-*Illex* and redfish, and their percentages of the total catch are given in Table 3. The fishing activity was carried out with three fishing vessels of 2700 GRT in Div. 3M, 3O, 4W and Subarea 6, and two vessels of 3600 GRT in Div. 2G, 2H and 3K. The Romanian fishing effort, catch per unit effort and catch by months are presented in Table 4.

#### SUBAREA 2

##### Status of the Fishery

The total Romanian catch from Subarea 2 amounted to 998 tons in 1979, an increase of about 69% from 589 tons taken in 1978 (Table 1). The main component of the catch, which was concentrated in Div. 2J, was capelin (846 tons) followed by Arctic cod (146 tons) (Table 5). The capelin fishery was conducted in September and October, with Arctic cod usually occurring as by-catch in both months. Due to the

mixture of capelin and Arctic cod in some day-time hauls and the mixture of capelin, Arctic cod, lumpfish and American plaice in some night-time hauls, amounts of 157 tons in September and 47 tons in October were discarded (Table 6).

In 1979, Romanian vessels conducted only a pelagic fishery for capelin. The fishery for demersal species like cod and roundnose grenadier was not carried out due to inadequate duration of the fishing season for them.

#### Biological Studies

Capelin. As indicated above the capelin fishery was concentrated in Div. 2J in 1979. Sampling consisted of measuring 10,127 fish (43 samples in September and 6,855 fish (30 samples) in October, with 1,839 and 476 specimens taken respectively for ageing.

Small-sized capelin, mainly 12.5 to 16.0 cm (mean length for both sexes - 14.95 in September and 14.86 cm in October) prevailed in the trawl catches. Compared with data for 1978 (Maxim *et al.*, MS 1979), the mean fork length of capelin was considerably less in 1979.

Age composition of capelin samples from Div. 2J in September and October 1979 indicate that 36.5% of the total number of specimens aged belonged to the 1978 year-class (age 1+) and 34.6% belonged to the 1977 year-class (age 2+), making a total of 71.1 % for these two year-classes (Table 7).

A more detailed account of the Romanian capelin fishery and investigations in 1979 was previously reported by Maxim (MS 1980a).

Small cod. During the directed fishery for capelin in 1979, massive and compact shoals of fish, subsequently found to be small Arctic cod which were not distinguishable from capelin on the sounder paper, were recorded from surface to bottom, with a consequent by-catch of 146 tons in Subarea 2.

The analysis of three cod samples (625 specimens) taken in September indicated 618 (98.9%) to be Arctic cod, 4 (0.6%) to be Atlantic cod, and 3 (0.5%) to be Greenland cod. During October, two samples consisted entirely of Arctic cod. The small Arctic cod appeared in the catches throughout the fishing period, with a decline in abundance in late September and early October.

### SUBAREA 3

#### Status of the Fishery

Two vessels (2700 GRT each) operated in Subarea 3 in 1979, the first in Div. 30 during January-March and the other in Div. 3M for 4 days in June, both vessels catching mostly redfish (Table 8).

#### Biological Studies

Redfish. Nearly all of the redfish from Subarea 3 were caught in Div. 30 during February and

March, but no samples of redfish for biological studies were collected.

Fishing activity in Div. 3M was limited to 4 days in late June (just before the July 1st opening date of the squid-*Illex* fishery) and only 4.2 tons of redfish were caught. The length and age compositions (201 and 111 specimens respectively) are presented in Table 9. The male:female sex ration in the sample was 40:60.

#### SUBAREA 4

##### Status of the Fishery

Subarea 4 was the second most important area of fishing activity in 1979 (Table 1) by two Romanian vessels with fishing licences for directed fishing on the short-finned squid (*Illex*). The total catch in 1979 was 838 tons, of which 832 tons were squid, compared with a total of 981 tons in 1978, of which 977 tons were squid. The remaining 6 tons in 1979 consisted of silver hake, offshore hake and swordfish taken as by-catch.

The special squid-*Illex* fishery was carried out in July (22 days), August (7 days) and September (5 days).

##### Biological Studies

Squid-*Illex*. The entire catch of squid (832 tons) was taken in the Emerald and Sable Island Bank areas (Div. 4W) during July-September (Table 10).

Length measurements for 73 samples comprising 15,115 specimens were collected in July and August. The catches were represented by squid with mantle length from 12 to 29 cm, with most in the length range of 16.5-22.5 cm. A more detailed account of the Romanian squid fishery and investigations in 1979 was previously reported by Maxim (MS 1980b, MS 1980c). An attempt is being made to estimate ages of squid from statoliths and the results will be reported later.

#### SUBAREAS 5 AND 6

##### Status of the Fishery

The nominal catch of all species in 1979 totalled 108 tons, a decline of 51% from the 223 tons taken in 1978 (Table 1). The main components of the catch were silver hake (45 tons), striped searobin (22 tons), and squid-*Loligo* (14 tons), caught on in February in Subdiv. 5Zw and Div. 6A (Table 10).

##### Biological Studies

The length measurements made on the various species sampled in February 1979 are as follows:

- |                   |   |
|-------------------|---|
| Atlantic mackerel | - 400 specimens (2 samples for length and 63 (1 sample) for age); |
| Silver hake       | - 200 specimens (1 sample);                                       |
| Striped searobin  | - 200 specimens (1 sample);                                       |

American shad	- 200 specimens (1 sample);
River herring	- 200 specimens (1 sample);
Butterfish	- 200 specimens (1 sample);
Squid- <i>Illex</i>	- 200 specimens (1 sample);
Squid- <i>Loligo</i>	- 800 specimens (4 samples).

The length composition and age-length key for mackerel are presented in Table 11; the length compositions by sex for silver hake, striped searobin, American shad and river herring are presented in Table 12; and the length compositions for butterfish, squid-*Illex* and squid-*Loligo* are given in Table 13.

#### REFERENCES

- MAXIM, C. MS 1980a. Capelin (*Mallotus villosus*) catch, effort and biological characteristics in the Romanian fishery in Division 2J, September-October 1979. NAFO SCR Doc. 80/II/4, Ser. No. N030.
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Table 1. Romanian catches in NAFO Subareas 2 to 5 in 1978 and 1979.

Species	1978 catch by subareas (tons)							1979 catch by subareas (tons)						
	2	3	4	5	6	Total	%	2	3	4	5	6	Total	%
Atlantic cod	-	3	-	-	-	3	0.1	1	5	-	-	-	6	0.2
Arctic cod	-	-	-	-	-	-	-	146	+	-	-	-	146	5.5
Greenland cod	-	-	-	-	-	-	-	+	-	-	-	-	+	-
Redfish	-	24	-	-	-	24	0.6	-	677	-	-	-	677	25.7
Greenland halibut	1	2	-	-	-	3	0.1	-	-	-	-	-	-	-
American plaice	-	-	-	-	-	-	-	1	-	-	-	-	1	0.1
Witch flounder	-	3	-	-	-	3	0.1	-	6	-	-	-	6	0.2
Silver hake	-	-	-	2	15	17	0.4	-	-	1	42	3	46	1.8
Offshore hake	-	-	-	-	-	-	-	-	-	2	-	-	2	0.1
Roundnose grenadier	-	108	-	-	-	108	2.6	-	-	-	-	-	-	-
Atl. round herring	-	-	-	11	14	25	0.6	-	-	-	-	-	-	-
River herring	-	-	-	-	-	-	-	-	-	-	1	-	1	-
Atlantic mackerel	-	-	4	1	16	21	0.5	-	-	-	8	2	10	0.4
Capelin	588	2075	-	-	-	2663	64.4	846	-	-	-	-	846	32.1
Striped searobin	-	-	-	-	-	-	-	-	-	-	18	4	22	0.8
Bigeye tuna	-	-	-	1	1	2	0.1	-	-	-	-	-	-	-
Swordfish	-	-	-	-	-	-	-	-	-	3	-	-	3	0.1
American sand lance	-	124	-	-	-	124	3.0	-	-	-	-	-	-	-
Butterfish	-	-	-	64	19	83	2.0	-	-	-	6	4	10	0.4
Spiny dogfish	-	-	-	1	-	1	-	-	-	-	5	-	5	0.2
Lumpfish	-	-	-	-	-	-	-	3	-	-	-	-	3	0.1
Other finfish	-	-	-	1	1	2	-	-	1	+	1	-	2	0.1
Squid- <i>Illex</i>	-	-	977	27	32	1036	25.1	-	+	832	-	-	832	31.6
Squid- <i>Loligo</i>	-	-	-	2	15	17	0.4	-	-	-	5	9	14	0.5
Pink shrimp	-	-	-	-	-	-	-	1	-	-	-	-	1	-
TOTAL	589	2339	981	110	113	4132	100.0	998	689	838	86	22	2633	99.9

Table 2. Romanian catch quotas allocated by Canada, USA and NAFO and catches (metric tons) in 1979.

Species	Allocated by	Stock area	Catch quota	1979 catch	% of quota
Atlantic cod	Canada	2GH	1600	5.0	0.3
	NAFO	3M	200	0.6	0.3
R. grenadier	Canada	2+3	2000	-	-
Redfish	Canada	30	1060	664.0	62.6
	NAFO				
Argentine	Canada	4VWX	1000	-	-
A. plaice	NAFO	3M	200	-	-
Capelin	Canada	2+3K	1750	846.1	48.3
Squid- <i>Illex</i>	Canada	3+4	1000	832.1	83.2
	USA	5Z+6	75	-	-
Squid- <i>Loligo</i>	USA	5Z+6	75	14.0	18.7
Silver hake	USA	5Z+6	1000	45.0	4.5
Red hake	USA	5Z+6	100	-	-
Other finfish	USA	5Z+6	443	39.0	8.8

Table 3. Main species caught by Romanian vessels in 1978 and 1979.

Species	1978		1979	
	Tons	%	Tons	%
Capelin	2663	64.4	846.1	32.1
Squid- <i>Illex</i>	1036	25.1	832.1	31.6
Redfish	-	-	677.2	25.7
Other finfish	433	10.5	278.0	10.6
Total	4132	100.0	2633.4	100.0

Table 4. Romanian catch and effort data by months in the Northwest Atlantic in 1979.

Month	No. of vessels	Fishing days	No. of hauls	Fishing hours	Catch tons	Catch/hour
Jan	1	7	23	88	36	0.41
Feb	2	37	151	412	384	0.93
Mar	1	11	54	207	372	1.80
Apr	-	-	-	-	-	-
May	-	-	-	-	-	-
Jun	1	3	4	8	5	0.62
Jul	1	22	69	153	577	3.77
Aug	1	7	21	55	151	2.75
Sep	2	45	202	567	614	1.08
Oct	2	24	113	318	494	1.55
Nov	-	-	-	-	-	-
Dec	-	-	-	-	-	-
Total	5	156	637	1808	2633	1.46

Table 5. Romanian catches (metric tons) in Subarea 2, 1979.

Species	2H	2J		SA 2
	Sep	Sep	Oct	TOTAL
Atlantic cod	-	0.6	-	0.6
Arctic cod	3.0	99.9	42.7	145.6
Greenland cod	-	0.5	-	0.5
A. plaice	-	0.2	1.1	1.3
Capelin	-	396.1	449.9	846.0
Lumpfish	0.1	2.4	0.5	3.0
Other finfish	-	0.9	-	0.9
Total	3.1	500.6	494.2	997.9

Table 6. Discards (metric tons) by Romanian vessels fishing in Subareas 2-4, 1979.

Species	2J		3K	3M	4W		
	Sep	Oct	Sep	Jun	Jul	Aug	Sep
Atlantic cod	0.7	-	0.1	-	-	-	-
Arctic cod	99.9	42.7	-	-	-	-	-
Greenland cod	0.5	-	-	-	-	-	-
Capelin	53.0	4.0	-	-	-	-	-
A. plaice	2.4	0.5	-	-	-	-	-
Swordfish	-	-	-	-	1.2	0.7	1.3
Other finfish	-	-	-	0.2	0.3	-	0.1
Pink shrimp	0.9	-	-	-	-	-	-
Total	157.4	47.2	0.1	0.2	1.5	0.7	1.4

Table 7. Age composition of capelin in Div. 2J, September-October 1979.

Age (yr)	Sep			Oct		
	M	F	M+F	M	F	M+F
1+	195	166	361	185	185	370
2+	171	181	352	174	166	340
3+	78	73	151	76	71	147
4+	68	33	101	69	23	92
5+	30	-	30	46	2	48
6+	4	-	4	2	-	2
Total (%)	546	453	999	552	447	999
No. fish sampled	1006	833	1839	263	213	476

Table 8. Romanian catches (metric tons) in Subarea 3, 1979.

Species	3M	30			SA 3
	Jun	Jan	Feb	Mar	Total
Atlantic cod	-	-	1	4	5
Atlantic redfish	4	35	262	367	668
Witch flounder	-	1	4	1	6
Squid- <i>Illex</i>	1	-	-	-	1
Total	5	36	267	372	680

Table 9. Length and age composition (‰) of redfish in Div. 3M, June 1979.

Length (cm)	Length composition			Age (yr)	Age composition		
	M	F	Total		M	F	Total
21	5	-	5	6	-9	-	9
22	5	10	15	7	36	45	81
23	20	40	60	8	117	45	162
24	75	109	184	9	162	72	234
25	129	109	238	10	54	189	243
26	35	80	115	11	63	99	162
27	20	30	50	12	18	63	81
28	30	45	75	13	-	9	9
29	20	35	55	14	9	-	9
30	15	20	35	15	-	9	9
31	10	20	30				
32	20	10	30				
33	5	20	25				
34	5	30	35				
35	5	25	30				
36	5	5	10				
37	-	10	10				
‰	404	598	1002		468	531	999
No. fish	81	120	201		52	59	111
$\bar{L}$ (cm)	26.4	27.2	26.9				
$\bar{W}$ (g)	244	271	260				

Table 10. Romanian catches (metric tons) in Subareas 4 and Subareas 5 and 6 in 1979.

Species	4W			SA 4 Total	5Ze	6A	5+6 Total
	Jul	Aug	Sep		Feb	Feb	
Silver hake	2	-	-	2	42	3	45
Offshore hake	-	1	-	1	-	-	-
Searobins	-	-	-	-	18	4	22
Mackerel	-	-	-	-	8	2	10
River herring	-	-	-	-	1	-	1
Butterfish	-	-	-	-	6	4	10
Swordfish	1	1	1	3	-	-	-
Spiny dogfish	-	-	-	-	5	-	5
Other finfish	1	-	-	1	1	-	1
Squid- <i>Illex</i>	574	148	110	832	-	-	-
Squid- <i>Loligo</i>	-	-	-	-	5	9	14
Total	578	150	111	839	86	22	108



Table 11. Length and age composition of Atlantic mackerel in Div. 6A, February 1979.

Length (cm)	Length frequency	Age-length key							
		4	5	6	7	8	9	10	
34	18	-	-	-	-	-	-	-	-
35	110	3	6	1	-	-	-	-	-
36	252	-	4	6	-	-	-	-	-
37	213	-	-	1	4	5	-	-	-
38	115	-	-	-	6	4	-	-	-
39	162	-	-	-	-	8	2	-	-
40	98	-	-	-	-	3	7	-	-
41	25	-	-	-	-	-	-	-	3
42	-	-	-	-	-	-	-	-	-
43	8	-	-	-	-	-	-	-	-
%	1001								
No. samp.	400	3	10	8	10	20	9	3	
Av. L(cm)	37.3	35.0	35.4	36.0	37.6	38.5	39.8	41.0	
Av. W (g)	537	433	455	452	533	583	679	750	
Age comp. (%)		48	159	127	159	317	143	48	

Table 12. Length composition of silver hake in Div. 6A, and of searobins, American shad and river herring in Subdiv. 5Zw, February 1979.

Length (cm)	Silver hake			Striped searobin			American shad			River herring		
	Div. 6A, Feb			Div. 5Zw, Feb			Div. 5Zw, Feb			Div. 5Zw, Feb		
	M	F	Total	M	F	Total	M	F	Total	M	F	Total
21				10	15	25						
22				35	45	80						
23				55	25	80						
24		5	5	40	-	40						
25	-	5	5	20	10	30						
26	-	30	30	45	15	60	-	20	20			
27	-	20	20	110	35	145	20	20	40	40	35	75
28	5	30	35	-	55	55	100	40	140	-	115	115
29	15	45	60	35	60	95	100	160	260	70	125	195
30	80	20	100	90	105	195	60	20	80	125	85	210
31	150	35	185	55	100	155	80	20	100	130	100	230
32	80	15	95	25	15	40	-	20	20	75	70	145
33	20	20	40				20	20	40	-	30	30
34	100	15	115				60	40	100			
35	20	60	80				20	40	60			
36	10	45	55				-	20	20			
37	5	15	20				20	20	40			
38	10	30	40				-	20	20			
39	-	25	25				-	-	-			
40	5	10	15				-	20	20			
41	-	5	5				-	-	-			
42	-	-	-				-	-	-			
43	-	-	-				20	-	20			
44	-	10	10				-	-	-			
45	-	15	15				-	-	-			
46	-	5	5				20	-	20			
47	-	5	5									
48	-	15	15									
49	-	10	10									
50	-	-	-									
51	-	-	-									
52	-	10	10									
%	500	500	1000	520	480	1000	520	480	1000	440	560	1000
No. samp.	100	100	200	104	96	200	104	96	200	88	112	200
Av. L̄(cm)	32.1	34.7	33.4	27.1	28.1	27.5	31.6	31.5	31.6	30.2	29.8	30.0
Av. W̄ (g)	189	312	250	199	238	217	291	279	285	269	251	259

Table 13. Length composition of butterfish, squid-*Illex*, and squid-*Loligo* in Div. 6A, February 1979.

Length (cm)	Atl. Butterfish			<i>Illex</i>	<i>Loligo</i>
	Div. 6A, Feb			6A	6A
	M	F	Total	Feb	Feb
7					2
8					1
9					13
10	-	-	30	40	19
11	10	25	35	80	47
12	35	90	125	260	68
13	80	120	200	520	140
14	45	130	175	100	193
15	-	60	60		152
16	35	20	55		99
17	40	20	60		74
18	25	65	90		65
19	30	55	85		45
20	15	30	45		21
21	5	15	20		13
22	-	20	20		21
23					16
24					4
25					5
26					-
27					1
28					-
29					-
30					-
31					1
%∞	320	680	1000	1000	1000
No. samp.	64	136	200	200	800
Av. L(cm)	15.2	14.9	15.0	12.6	15.1
Av. W (g)	94	76	81	33	97