

International Commission for



the Northwest Atlantic Fisheries

Serial No. 3371  
(D.b.73)

ICNAF Summ.Doc. 74/46  
(Revised)

ANNUAL MEETING - JUNE 1974

Status of fisheries and research carried out in Subarea 3 in 1973

by

Rui Monteiro  
Instituto de Biologia Marítima  
Cais do Sodré  
Lisbon, Portugal

The following Research Documents contain information relating to Subarea 3: 74/2, 3, 4, 5, 6, 7, 8, 12, 21, 48, 49, 53, 54, 55, 59, 63, 67, 69, 70, 71, 73, 75, 76, 77, 78, 79, 80, 89, 103 and 104. The relevant Summary Documents are: 74/11, 21, 22, 24, 26, 27, 28, 29, 30, 31, 32, 33, 36, 37 and 38.

1. Status of the Fisheries

Table 1 gives the total nominal catch from Subarea of all species and of TAC species, considered separately, for the year 1973 and for the three preceding years.

Table 1. Nominal catches from Subarea 3 (thousand tons, round fresh).

	1970	1971	1972	1973*
All species	971	954	958	994
Cod	533	514	524	462
Redfish	81	102	123	111
Greenland halibut	26	14	18	15
American plaice	89	80	71	72
Witch	22	31	28	33
Yellowtail flounder	27	38	40	34
Roundnose grenadier	23	18	21	11
Capelin	3	3	53	209

\* Provisional figures.

Table 2 gives the nominal catch from Subarea 3 of all species combined by countries for the years 1972 and 1973, and a breakdown by the same species as in Table 1.

For 1973 the cod catch decreased mainly due to declines of Canada and Spain. The redfish decrease was mainly the result of smaller catches by USSR (Canada, Fed.Rep. Germany and Portugal reported increases). The figures for Greenland halibut, American plaice, witch, yellowtail flounder and roundnose grenadier are not very different. The capelin catch shows a large increase, almost solely by Norway and USSR.

Table 2. Nominal catches from Subarea 3 in 1972 and 1973 by TAC species and country (thousand metric tons, round fresh)

Species	Year	Total	Bul	Can	Den	Fra	FRG	Ice	Jap	Nor	Pol	Por	Rom	Spa	USSR	UK	GDR
Cod	1972	524	∅	96	8	16	20	∅	-	6	23	89	2	158	81	8	16
	1973*	462	∅	71	13	7	29	**	∅	8	25	87	2	106	71	4	22
Redfish	1972	123	∅	7	-	1	1	∅	1	∅	3	-	∅	-	105	∅	2
	1973*	111	∅	15	∅	∅	4	**	3	∅	4	6	∅	-	86	1	3
Greenland halibut	1972	18	-	9	-	-	-	-	-	-	4	-	∅	-	4	-	∅
	1973*	15	-	7	∅	∅	1	**	∅	∅	2	∅	∅	-	3	∅	1
American plaice	1972	71	-	49	-	1	∅	-	-	-	3	-	1	-	17	∅	∅
	1973*	72	-	53	-	1	-	**	-	-	1	-	∅	-	11	∅	∅
Witch	1972	28	-	11	-	∅	∅	-	∅	-	3	-	∅	-	12	∅	1
	1973*	33	-	12	-	∅	1	**	-	-	12	1	∅	-	4	∅	2
Yellowtail flounder	1972	40	∅	27	-	1	-	-	-	-	-	-	-	-	12	∅	-
	1973*	34	-	29	-	∅	-	**	-	-	-	-	-	-	3	-	-
Roundnose grenadier	1972	21	-	-	-	-	-	-	-	-	∅	-	-	-	21	-	∅
	1973*	11	-	-	-	-	-	**	-	-	∅	-	-	-	11	-	∅
Capelin	1972	53	∅	4	-	-	-	-	-	1	-	-	-	-	48	-	∅
	1973*	209	-	6	-	-	-	**	-	41	2	-	-	-	160	-	-
All species	1972	952	1	268	8	19	21	∅	2	6	36	89	3	161	310	10	19
	1973*	994	∅	227	13	9	37	**	3	49	49	94	3	107	368	7	28

\* Provisional figures.  
 \*\* Catch figures not known.  
 ∅ Less than half unit.

Cod

Total nominal catches from Subarea 3 - 462,000 tons - are lower than in previous years, the decline being due mainly to a decrease in Div. 3M and 3O.

According to the USSR observations, in the southern part of the Grand Newfoundland and St. Pierre Bank the stock will be mainly represented by poor year-classes or by year-class of average abundance. The strong 1968 year-class will practically disappear from the catches and the cod fishery will be based mainly on the 1970 and 1971 year-classes (Summ.Doc. 74/26). The 1967 and 1968 year-classes also predominated in Divisions 3K and 3L.

In the Portuguese fleet the proportion of catches by trawlers, dories and gillnets has been about the same as in the previous year, being approximately 79%, 9% and 12% respectively. The highest and lowest catches occurred respectively in Div. 3L and 3N for trawlers and dories and in Div. 3O and Subdiv. 3Pn for gillnets (Summ.Doc. 74/29).

The 1967 year-class in Div. 3L, followed by the 1968 year-class was found to be predominant by Denmark in Div. 3KL (Summ.Doc. 74/30).

For Spain the most important cod fishing grounds are in Subarea 3 where 66% of the cod were caught in 1973. Nevertheless, only in Subdiv. 3Ps have the catches been higher than in 1972 (Summ.Doc. 74/27).

German Dem.Rep. reported cod to be the most important species, caught mainly in Div. 3K. In this division and in Div. 3L, the 1968 year-class was the predominant one, but in Div. 3L the 1969 year-class was relatively well represented (Summ.Doc. 74/32).

The decline of the Canadian fishery was reported to be attributed mainly to the decrease in the inshore catch. The 1968 year-class is indicated as an important one and a decline in cod abundance is indicated for the period between 1971 and 1972, partly due, probably, to the distribution of cod in deep water because of unusually cold conditions (Summ.Doc. 74/21).

Table 3 compares the 1973 nominal catches with those obtained in the previous two years and with the average catches taken in the five years 1966-70, and shows also the quotas for 1974 and the TACs recommended by the Assessments Subcommittee for 1975 in divisions where they have been allocated.

Table 3. Subarea 3 cod catches by division (thousand metric tons).

Division	2J-3KL	3M	3NO	3Ps
Average 1966-70	657	28	140	66
1971	432	34	126	64
1972	458	58	103	44
Provisional 1973	354	24	64	51
Quota allocated 1974	656.7	40	101.1	70
Recommended TAC 1975	550	40	85	60

The decline in catch in Div. 2J-3KL can be attributed to severe ice conditions in Div. 2J and also to the reduction of the proportion of older fish in the stock, mainly in Div. 3L inshore. The incoming year-classes of 1969 and 1970 are estimated to be relatively poor. Also because fish are taken at a young age the catch at  $F_{max}$  in 1975 is estimated to be 550,000 tons.

The Assessments Subcommittee studied the effect of closure during February-April of Hamilton Inlet Bank (Div. 2J) and concluded that, although there could be some benefit for the fishery in this division, the effort would probably be diverted to other divisions and it would not necessarily result in a substantial reduction in catch. The Subcommittee concluded that if an increase in stock size is desired, then the level of  $F$  must be reduced and that this would best be accomplished by a direct reduction of the TAC.

For the Div. 3M stock, the Assessments Subcommittee proposes a TAC of 40,000 tons for 1975 based on additional data available.

The decrease in catch from the Div. 3NO stock has been very high. Recruitment estimates indicate that the 1969-71 year-classes are poorer than the 1968 year-class. The proposed TAC for 1975 is 85,000 tons.

For the Subdiv. 3Ps stock, the new calculations made indicated lower stock sizes than estimated previously. On the other hand, the 1971 year-class is stronger than the 1969 and 1970 year-classes, but these are all poorer than the 1968 year-class. The TAC recommended for 1975 is 60,000 tons.

#### Haddock

According to the USSR observations (Summ.Doc. 74/26) the stocks of haddock remain at a low level off the Grand Bank but may be somewhat higher off St. Pierre Bank. The catches reported by Spain suffered a decline in abundance (Summ.Doc. 74/27). Canada reports some data on abundance, which is generally low (Summ.Doc. 74/21).

Redfish

The catch of redfish decreased slightly in comparison with the catch of 1972. The USSR catches decreased and those of Canada, Fed.Rep. Germany and Japan reported an increase. Portugal reported for the first time a significant catch of 6,000 tons.

The fishing effort in Subarea 2 and Division 3K since 1966 has been stabilized below the level to achieve the equilibrium yield, but due to the heavy fishing pressure in the early years of the fishery, the stocks show signs of depletion so the level of catch must be restricted (Res.Doc. 74/5). The decrease in mean length observed by the USSR in commercial catches off the Flemish Cap can be explained by more abundant recruitment (Summ.Doc. 74/26).

Table 4. Subarea 3 redfish catches by division (thousand metric tons)

Division	2-3K	3M	3LN	30	3P
Average 1966-70	25	4	20	14	28
1971	19	8	34	20	28
1972	20	42	29	16	26
Provisional 1973	44	21	42	9	19
Quota allocated 1974	30	40	28	16	25
Recommended TAC 1975	30	16	20	16	25

For the Div. 2-3K stock the Assessments Subcommittee proposes a TAC of 30,000 tons to allow for further rebuilding of the stock. The increased catch in 1973 may have resulted from increased effort on the younger newly recruited fish.

For Div. 3LN, there was a lack of recent information. The Assessment Subcommittee recommended a TAC of 20,000 tons which is the same as that recommended and considerably below that allocated for 1974.

Concerning Div. 30 and taking into account that the catch has declined in recent years, the same TAC as for 1974 was recommended - 16,000 tons.

For Div. 3P, indications are that recruitment will be poor in the future, so it is probable that the TAC recommended - 25,000 tons - may not be sustained in the next years when the fishery becomes dependent on the new year-classes.

Greenland halibut.

It seems that the stock is a single one in the Northwest Atlantic, but, for management purposes, it has been recommended to consider the stock in Subarea 1 and Subarea 2-Div. 3KL separately.

Table 5. Subarea 2-Div. 3KL Greenland halibut catches (thousand metric tons).

Division	2-3KL
Average 1966-70	30
1971	25
1972	30
Provisional 1973	28
Quota allocated 1974	35
Recommended TAC 1975	40

American plaice.

American plaice catches remained at roughly the same level with regards to the total subarea catch (Table 2). In Subdiv. 3Ps where there was an increase in catch reported by Canada and the USSR.

Table 6. Subarea 3 American plaice catches by division (thousand metric tons).

Division	2-3K	3M	3LNO	3Ps
Average 1966-70	6	1	76	8
1971	5	1	68	7
1972	9	1	59	7
Provisional 1973	5	0	53	15
Quota allocated 1974	8	2	60	11
Recommended TAC 1975	8	2	60	11

The TACs recommended for 1975 by the Assessments Subcommittee are: 8,000 tons for Subarea 2-Div. 3K (including the allocation from outside the Convention Area), 2,000 tons for Div. 3M, 60,000 tons for Div. 3LNO and 11,000 tons for Subdiv. 3Ps.

Witch

Compared with 1972, there has been an increase in landings in 1973 of witch, with the exception of USSR whose catches have declined. The increase occurred mainly in the catches of the Div. 2J-3KL stock.

It was noted by Poland (Summ.Doc. 74/32) that in comparison with previous years, there was a significant increase of larger and older fish in the 1973 catches which may be an indication of the stability of the stocks.

The TACs recommended for 1975 are: 17,000, 10,000 and 3,000 tons for Div. 2J-3KL, Div. 3NO and Subdiv. 3Ps respectively.

Yellowtail flounder

The decrease observed in the 1973 catch resulted from the decline reported by USSR. The TAC recommended by the Assessments Subcommittee is 35,000 tons.

Roundnose grenadier

This species also shows a decline. Practically only the USSR reported catches in Subarea 3. Assessments have been made for Subarea 2 and 3 together and the recommended TAC is 32,000 tons.

Capelin

According to the most recent information, the stocks from Div. 3LNO and Subdiv. 3Ps belong to one stock complex and the Div. 2J-3K stock belongs to another stock complex (Res.Doc. 74/12).

Res.Doc. 74/63 deals with commercial catches in June/July 1973 by Norwegian ships following some observations made in previous years.

It has been concluded that the stocks in SA 2 and 3 mature at 3 to 4 years of age and suffer very heavy natural mortality after spawning. The catches should be restricted to mature capelin approaching and during the spawning season in such a way as to ensure that enough spawning stock will survive to ensure that future recruitment will not be impaired.

The Assessments Subcommittee recommended that a TAC of 500,000 tons would be appropriate, coupled with (i) restriction of the fishery to mature capelin approaching and during the spawning season (June), and (ii) countries participating in the fishery should conduct surveys of both the adult and juvenile stock in order to monitor the effect of the fishery. The split of the TAC would be 300,000 tons in Div. 2-3K and 200,000 tons in Div. 3LNOPs.

2. Research Work.

Biological studies on some species in Subarea 3 were reported by Japan (redfish and squid), Portugal (cod), FRG (cod and redfish), Spain (cod), USSR (cod, haddock, redfish, ichthyoplankton, hydrology and tagging experiments), German Dem. Rep. (cod, redfish, witch), Poland (cod, redfish, witch, American plaice, hydrology and plankton). Norway (capelin), Canada (cod, haddock, flatfishes, redfish, herring, mackerel, roundnose grenadier, capelin, whales and squid), UK (plankton - Continuous Plankton Recorder) and France (cod, yellowtail, American plaice, squid).

3. Hydrology and Plankton

Hydrological studies have been conducted in the area by several countries: USSR, USA, Canada, France and Fed.Rep. Germany. UK reports more work done with the Continuous Plankton Recorder. USSR gives information on cod eggs in north Newfoundland waters. A reference must be made to the proposition of USA for intensive studies to be conducted in Subarea 3, especially in Cabot Strait and Grand Bank. In this environmental research program it is intended to have a picture of the seasonal changes in the water masses and position of coastal-slope water front; intensive studies in key areas in order to describe the dynamic physical processes which drive the circulation patterns critical to the production and distribution of marine organisms.

The hydrological results have been appreciated by the Environmental Subcommittee. Concerning Subarea 3, the main conclusions reached are: "On the Labrador Shelf surface temperatures were above average in July-August but in the intermediate layer were lower than the 1951-71 mean, although not as low as in 1972. In the deep slope water east of Hamilton Inlet Bank temperatures were lower than in 1972 and in the deepest layer comparable with or lower than the lowest over the last 20 years.

"In the Grand Bank to Flemish Cap area surface temperatures were above average (1951-71) but were below normal over the southern part of the Bank. Bottom temperatures on the western Grand Bank and in the Avalon Channel were lower and very cold water, below -1.5C, covered with a greater area of the bottom than in any previous year of the period. The Atlantic current to the south of Grand Bank was reported by the USCG to be 40 miles further north than average and directly along the Tail of the Bank, forming the Labrador Current which generally appeared to be weaker than normal in the period April-May up onto the Bank itself."

#### 4. Groundfish Survey

Five countries (USSR, Canada, USA, Fed.Rep. Germany and France) have reported groundfish surveys in some divisions of Subarea 3.

Some progress has been reached both in the seasonal ~~coverage~~ of some regions and the stratified procedure and standardization of the recorded data, and the need for the introduction of standard forms suitable for computer processing.

Although not directly related to the Subarea 3, a mention must be made to the first joint USA-USSR hydroacoustic experiment carried out in Subarea 4 in March/April 1974 for the foreseeing possibilities that the methods involved can give for aquatic biomass measurements, especially in areas where not great mixture of species occur.

