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Report of Standing Committee on Research and Statistics (STACRES)<sup>1</sup>  
Ottawa, Canada, 15-19 October 1973

Chairman: A.W. May

Rapporteur: V.M. Hodder

STACRES met on 15 October 1973 at the request of Panel 5 to (a) review the latest information available on catches and effort in Subarea 5 and Statistical Area 6, and (b) consider the implications of an overall TAC together with TAC's for individual species. Representatives were present from 13 Member Countries (none from Iceland, Portugal and Romania) and observers were present from the German Democratic Republic. A further meeting was held on 16 October to approve the report.

1. Review of latest catch information for Subarea 5 and Statistical Area 6

The latest statistics for 1972 (Table 1) indicate that the nominal catch of finfish (except menhaden) and squids totalled 1,188,000 tons compared with 1,142,000 tons in 1971. The various representatives present were requested to provide information on their countries' fisheries in 1973. Some countries provided catch data for a portion of the calendar year and projected catches for the entire year; others gave their 1973 projected catches only; and in cases where no 1973 data were available (no representative at the meeting) the 1972 catches were used. On the basis of this preliminary information (Table 2), the projected catch of finfish (except menhaden) and squids is estimated at 1,169,000 tons for 1973. It must be noted that the US herring catch given in Table 2 does not include juvenile herring, and therefore, the overall totals for 1972 and 1973 are not directly comparable. However, since the juvenile catch in 1973 was about 11,000 tons, then the overall total for 1973 would be about 1,180,000 tons, slightly less than the catch in 1972.

2. Review of fishing activity in 1973

Canada, Japan, USSR and German Democratic Republic indicated that no significant change in fishing activity was anticipated between 1972 and 1973. Spain reported no change in the cod fishery but an increase from 19 to 25 vessels taking part in the squid fishery. Federal Republic of Germany anticipates a slight decrease in fishing effort in attaining its herring quota due to a slight increase in catch per unit effort from 1972 to 1973. USA expects a 5% decline in effective fishing effort. Poland reported a decline of about 30% in fishing effort (standard days fished) to the end of August and noted that this would mean a projected 10-15% reduction in the 1973 Polish total catch.

3. The potential yield and future management of the fisheries in Subarea 5 and Statistical Area 6

At its Mid-Term Meeting STACRES estimated the potential catch for 1973 to be about 846,000 tons, excluding herring (Redbook 1973, Part I, p. 19-20). That estimate also excluded squids but it included about 30,000 tons of pollock attributable to Subarea 4. Adjustments for these species indicate a potential catch of 1,056,000 tons. Bearing in mind that this includes a permitted catch of mackerel greater than that included in the estimate of surplus yield, the projected catch for 1973 exceeds the previously estimated potential catch by 100,000 tons.

The adjusted figure of 1,056,000 tons, however, is believed to be a very generous estimate of the harvestable surplus in 1973 for the following reasons:

(a) The haddock and herring quotas set for 1973 were known at the time to exceed the TAC's recommended by STACRES, the hake and mackerel quotas have remained generous owing to the provisional nature of the assessments, and quotas for some other species have been set in relation to average catch levels which, because of redeployment of fishing on them in recent years, are likely to have exceeded their sustainable yields.

(b) The total harvestable surplus defined in answer to Canadian Question 2 (Redbook 1973, Part I, p. 19) was estimated by summing TAC's and it excluded the effect of interaction between fisheries in reaching

<sup>1</sup> Presented to the Special Commission Meeting, FAO, Rome, January 1974 as Summ.Doc. 74/1.

the individual species quotas (the by-catch problem). STACRES concluded (Redbook 1973, Part I, p. 26) that such an aggregate TAC would tend to over-estimate the true harvestable surplus. Analyses of the by-catch problem (Comm.Doc. 73/18 and Res.Doc. 73/99) indicate that a reduction in catch of between 5 and 20% from the sum of the individual species TAC's might be required to ensure compatibility between quotas on individual species, the upper limit depending on what the Commission's objectives might be in relation to the various directed fisheries.

(c) The estimate does not take account of longer term biological interaction between the resources.

STACRES, therefore, concludes that the catches in 1973 will have exceeded the true harvestable surplus of the total resources and that this situation has obtained for some years, with the result that the total biomass of the resources has not been maintained. This is corroborated by the continuing decline monitored by the groundfish surveys (e.g. Redbook 1973, Part I, Fig. 1, p. 11). Neither the stock nor the catch appears to be stabilizing, and, at least up until 1973, catch levels have been maintained by increasing fishing. Total biomass assessments which do take into account longer term interactions of resources indicate the average sustainable yield to be about 850,000 tons (Redbook 1973, Part I, Table 4, p. 12), although in particular years the figure would be higher as one or more of the major resource components was particularly strong.

At its Mid-Term Meeting STACRES also estimated that in 1971 fishing effort was 25% in excess of the level necessary to fully exploit the total stock (Redbook 1973, Part I, p. 19), although the degree of excess was partly related to the state of the mackerel resource which is still subject to discussion. There was some further increase in fishing activity in 1972, based on US overflight information (Redbook 1973, Part I, p. 14). Taking into account (i) a stabilization and perhaps a decrease in 1973, and (ii) some redistribution of fishing onto hitherto less valued species, and also the generous level of fishing on some species permitted by existing quotas, then 25% remains the best estimate of the surplus fishing effort at the present time. A reduction of this amount represents an objective which would enable the fishery to stabilize at a level giving the maximum sustainable yield.

In short, the fishery has developed beyond the level of fishing required to harvest the surplus and, if maintained, the fishery will gradually stabilize at a level lower than the maximum sustainable yield. Catches have been maintained by increased fishing and reduction of the stock. The stock size now is, in fact, lower than if the stock were in equilibrium with the present level of fishing. A reduction of fishing to the level associated with the maximum sustainable yield in one year, therefore, would not give that yield but something rather below it. STACRES believes this to be in the region of 800,000 tons. The catch would then gradually return to the MSY level as the stock recovered. In principle, the greater the degree of reduction that can be achieved, the more rapid this recovery would be.

Although this framework of relationships is valid, STACRES cannot be confident of the specific levels of catch or effort associated with the objective. The Commission might, therefore, wish to approach it by phasing the reduction in catch. The short-term objective of such a phased reduction would be to halt the current decline in biomass and, depending on the level of catch that achieves this, it might be desirable to temporarily reduce catches further to permit a recovery of the stock and thence a re-expansion of the catch to the sustainable yield level. Stabilization of the biomass could be judged by the biomass of the groundfish species as recorded in the coordinated groundfish surveys and, since these are subject to sampling error, two consecutive years of stability would represent the minimum criterion of adequacy of the reduction.

Since the available evidence indicates the eventual requirement to stabilize and recover the biomass might be a reduction in catch to 800,000 tons, the level selected for the initial reduction must be significantly less than recent catches and might be guided by the total quota which it has been estimated would permit compatibility between individual species quotas (Comm.Doc. 73/18, Tables 4 and 5). This figure would be 15-20% below the sum of the anticipated TAC's for 1974 which is likely to be similar to those in 1973. Had this been applied to the TAC's in 1973, this would have given total catch of 850,000 to 900,000 tons. But it must be appreciated that, while such a reduction contributes to a solution of the by-catch problem, it does not necessarily resolve the conservation issue.

#### 4. Note on TAC for pollock in Subareas 4 and 5

STACRES wishes to draw attention to the fact that the pollock TAC adopted at the 1973 Annual Meeting refers to pollock in Div. 4VWX as well as in Subarea 5. It is noted that catches of pollock in Div. 4VWX on the one hand, and in Subarea 5 on the other, were approximately the same in 1971 and 1972 and that the total catch for both areas in these years was substantially less than the TAC adopted (i.e., 55,000 tons for 1974). It is not known whether the catches in these respective areas would be about equal if the TAC for 1974 were fully achieved. However, it is clear that, in considering an overall TAC for Subarea 5 and Statistical Area 6, only that part of the pollock TAC expected to be caught in Subarea 5 and Statistical Area 6 should be included.

Table 1. 1972 nominal catches of finfish and squid in Subarea 5 and Statistical Area 6.

	BUL	CAN	FRA	FRG	JAP	POL	ROM	SPA	USSR	USA	DEN	ITA	GDR	CUBA	TOTAL
Cod	76	2,598	-	17	100	271	14	6,704	1,889	19,970	-	-	135	2	31,776
Had	-	632	-	-	-	1	-	1,098	141	4,772	-	-	5	-	6,649
Red	15	124	-	3	15	5	14	-	5,641	13,162	-	-	127	14	19,120
S H	3,543	-	-	226	205	-	169	-	101,877	8,313	-	-	220	828	115,381
R H	1,514	-	-	131	392	16	43	-	71,333	2,529	-	-	45	-	76,003
Pol	-	1,366	-	467	4	8	-	78	1,043	5,234	-	-	4,802	-	13,002
Ye1	573	9	-	-	5	-	74	-	4,876	32,980	-	-	-	-	38,517
Flo <sup>1</sup>	8	83	-	-	13	2	-	-	5,928	17,884	-	-	-	118	24,036
Her	2,355	11,691	500	30,633	1,161	49,492	2,156	-	48,316	40,994	-	-	49,312	-	236,610
Mac	23,556	1	-	770	1,104	141,999	2,519	6	134,057	1,996	-	-	80,537	9	386,554
O G	87	895	-	-	1,759	635	69	30	16,153	13,649	-	-	302	-	33,579
O P <sup>2</sup>	2,583	165	-	24	3,896	22	184	-	5,262	1,580	-	-	46	-	13,762
O F	4,960	3	-	154	1,463	8,795	36	225	85,458	37,706	260	-	4,242	586	143,888
Squ	499	-	296	463	18,691	5,428	66	11,859	6,976	1,214	-	4,000	-	-	49,492
Total	39,769	17,567	796	32,888	28,808	206,674	5,344	20,000	488,950	201,983	260	4,000	139,773	1,557	1,188,369 <sup>3</sup>

<sup>1</sup> Flounders, except yellowtail.

<sup>2</sup> Other pelagics, except menhaden.

<sup>3</sup> Norway caught 87 tons of other pelagics in Subareas 3, 4 and 5.

Table 2. Estimated catches of finfish (except menhaden) and squid in Subarea 5 and Statistical Area 6 for 1973 (bracketed figures are projections for the calendar year). Also given are TAC's for 1973 and TAC's recommended by STACRES for 1974.

	1973 TAC ('000 tons)	BUL <sup>7</sup>	CAN <sup>8</sup>	DEN	FRA	FRG <sup>8</sup>	ITA	JAP	POL <sup>9</sup>	ROM	SPA <sup>8</sup>	USSR <sup>8</sup>	USA <sup>9</sup>	GDR	Others <sup>7</sup>	Recommended 1974 TAC ( '000 tons)
Cod	45	-	2339 (2839)	-	-	-	-	-	-	-	-	1586	14047 (19304)	-	-	45
Had	6	-	1144 (1644)	-	-	-	-	-	-	-	-	548	2536 (3235)	-	-	012
Red	30	-	144 (204)	-	-	-	-	-	-	-	-	2226	10207 (12467)	-	-	30
S H	170	-	-	-	-	-	-	-	-	-	-	76967 (102000)	9030 (12757)	-	-	170
R H	40 <sup>5</sup>	-	-	-	-	-	-	-	-	-	-	35278	-	-	-	50-70
Pol	50 <sup>6</sup>	-	1491 (1991)	-	-	-	-	-	-	-	-	1137	2363 (6638)	-	-	55 <sup>12,13</sup>
Yel <sup>1</sup>	26	-	11 (16)	-	-	-	-	-	-	-	-	1103	17009 (26798)	-	-	26
FLo <sup>2</sup>	25	-	66 (95)	-	-	-	-	-	-	-	-	9480 (12640)	-	-	-	25
Her <sup>3</sup>	175	-	8374 (9110)	-	(500)	30000 (32600)	-	(1200)	11500 <sup>10</sup> (49600)	-	-	48400 (48400)	10054 (16430) <sup>11</sup>	-	(45000)	175
Mac	450	-	53 (60)	-	-	-	-	-	79400 (130000)	-	-	82637 (148000)	784 (877)	-	(80000)	245
O G		-	702 (970)	-	-	-	-	-	-	-	-	23291	-	-	-	
O P <sup>4</sup>		-	630 (630)	-	-	-	-	-	-	-	-	949	-	-	-	
O F		-	4 (6)	(300)	-	-	-	-	-	-	-	11623	-	-	-	
Squ		-	-	-	(300)	(3000)	(5000)	(20000)	8200 (8200)	-	14200 (18000)	5107	677 (831)	-	-	
NK		-	-	-	-	(2000)	(1000)	(8800)	(2300)	-	(8000)	-	57993 (68283)	-	(15000)	
		(40000)	14958 (17565)	(300)	(800)	(37600)	(6000)	(30000)	108000 (190000)	(9000)	(26000)	(490000)	134180 (180260)	(140000)	(1500)	

1973 Estimated Total (1169025)

1 Subarea 5 only.  
 2 Flounders, except yellowtail.  
 3 Adult herring only.  
 4 Other pelagics, except menhaden.  
 5 Applies to Subdiv. 52w and Statistical Area 6.  
 6 Applies to Div. 4X and Subarea 5.  
 7 Based on 1972 total catch.  
 8 Preliminary catches for Jan-Sep.  
 9 Preliminary catches for Jan-Aug.  
 10 Catch to 10 Oct 1973 of 37500 tons.  
 11 Excludes about 11000 tons of juveniles by USA.  
 12 Adopted by Commission in June 1973.  
 13 Applies to Div. 4VWX and Subarea 5.