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Recent Trends in Scottish Salmon and Grilse Catches

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Because of the early date of the first meeting of the Joint Working Party in 1970, full statistics for the 1969 Scottish salmon and grilse catches are not yet available. A report on these, in the usual form, will be submitted later and will also include minor alterations to the 1968 figures submitted in last year's report (ICES/ICNAF Salmon Doc. 69/13), due to some late returns. In the meantime, estimates of the likely level of Scottish catches in 1969 are submitted in Table 1, together with the actual catches in previous years since 1952.

If these estimates for the 1969 catches prove accurate, the combined catch of salmon and grilse will be the second highest recorded since 1952 and the grilse catch will be the largest, possibly almost 20% better than the previous best, recorded in 1967. The salmon catch, on the other hand, will be the second lowest recorded since 1952 and may be about 20% below the average for the period 1952-68.

The main purpose of this report is to draw attention to some of the trends in the Scottish salmon and grilse catches during the period 1952-68; the analyses which follow being largely based on the figures submitted in last year's report (ICES/ICNAF Salmon Doc. 69/13), except that the 1968 values shown in that report have been amended where appropriate.

I Trends in Salmon Catches

a) Annual Catches

Table 1 shows that Scottish salmon catches have varied widely over the period under review and, in order to minimise the effects of these annual fluctuations, 5-year rolling averages have been prepared for the catch of salmon by all methods. These averages, which are given in Table 2 and are shown graphically in Fig. 1, indicate that, following a downward trend during the late fifties and early sixties, there was, in general, an upward trend during the main period of the development of the Greenland inshore fishery but that this was followed by a downward movement in recent years.

It should perhaps be mentioned that the upward trend during the mid-sixties could have been exaggerated and the more recent downward trend somewhat masked if, as seems probable, a proportion of the steadily increasing grilse catches over the period (Table 1) have been included in the salmon catches, for the reasons suggested by Went in a recent paper to the Anacat Committee of I.C.E.S. (CM 1969/M:2).

b) Seasonal Catches

There has been considerable comment in Scotland in recent years on the obvious decrease in the numbers of salmon entering Scottish rivers in the spring, particularly by commercial fishermen because of the high price which these fish command on the market.

Commercial catch figures are the most appropriate to use in any attempt to discern changes in the seasonal pattern because the majority of the fish in them are taken soon after they approach the coast and enter freshwater, whereas rod-caught fish may, perhaps, be taken some time after they have entered the river. Annual 'spring' and 'summer' commercial catches are, therefore, given in Table 3 and 5-year rolling averages for these in Table 4. The latter are also shown graphically in Fig. 2.

It is quite clear that there has indeed been a long-term and continuing trend towards smaller spring catches throughout this period so that spring catches, which represented 50% or more of the catch during the early part of the period, now account for only 20-30% of the catch (Table 3). It is equally clear, however, that there has been at least as great a tendency towards an increase in summer catches, so that the overall picture seems to be one of a change in the seasonal pattern of the arrival of the salmon in home waters rather than a complete loss of some fraction of the stock. It is, however, perhaps worth recalling that the inclusion of large grilse in the salmon catches, as mentioned above, would have no effect on the 'spring' catches but could exaggerate the extent of the increase in 'summer' catches.

Perhaps the most important point to note about these trends in 'spring' and 'summer' salmon catches is that, in both cases, they were in existence considerably before the Greenland salmon fishery could have had any effect on home water catches and the onset of these changes in the seasonal pattern of salmon catches cannot, therefore, be directly attributed to the development of the Greenland fishery.

II Trends in Grilse Catches

a) Annual Catches

There has been a marked tendency towards increasingly large grilse catches during the period 1952-69 (Table 1) and this very marked and continuing trend is strikingly indicated in Table 2, which gives 5-year rolling averages for the annual Scottish grilse catch, and in Fig. 3 where the latter are shown graphically.

The effect of this steady increase in grilse catches has been to increase the proportion of grilse in the total catch from 30-40% in the early fifties to 50% or more in the second half of the sixties (Table 5) and here again, there is the possibility that the full extent of this increase may have been masked by the inclusion of some larger grilse in the salmon figures.

b) Seasonal Catches

Went, in his report to ICES (CM 1969/M:2) drew attention to a tendency towards later runs of grilse in Ireland in recent years. Table 6 shows the Scottish commercial grilse catch for each month in each year, expressed as a percentage of the total commercial catch of grilse for that year, for the period 1952-68.

From this table it is clear that in Scotland also, throughout this period, there has been an increasing tendency for a smaller proportion of the total to be recorded in May and June and a high proportion in August and September, while July has remained the peak month for grilse catches throughout. Yet again, the full extent of this change may be masked by the inclusion of large grilse in the salmon figuresand this would particularly affect the value for August and September in Table 6 because of the tendency for a higher proportion of the grilse which remain longer in the sea to be above the weight limit usually accepted for the commercial division of the catch into salmon and grilse.

Although details of commercial catches are not yet available for 1969 there is little doubt, from reports and comments received from commercial fishermen, that this tendency was continued into 1969 and indeed, the extent to which this occurred may have increased considerably, as reports were of exceptionally heavy late runs of unusually large grilse.

c) Changes in Average Weight

Went also suggested that, as a result of the later entry of grilse in Ireland, there had been an increase in the average weight of these fish in recent years.

Table 7, which gives the average weight of Scottish salmon and grilse in each year from 1952-68, does not provide any evidence for more than a very modest increase in the average weight of grilse over this period but this is not, perhaps, surprising if increasing numbers of the larger grilse have been included in the salmon catch. However, the inclusion of the larger grilse in the salmon catch, most of which would presumably be less than 10 lb. in weight, might have been expected to have the effect of depressing the average weight for salmon. The values for salmon, however, do not give any indication that such a decrease has occurred but this could be explained by a compensatory effect on the average weight of salmon due to the increased numbers of summer fish in the catches in recent years (Table 3) and which would normally be heavier than spring fish of the same sea age.

It is hoped to present a more detailed analysis of the extent to which the inclusion of grilse in the salmon catch may have affected catch figures in a report on the results of commercial catch sampling in three major Scottish salmon rivers during 1969.

Table 1 Annual Scottish Catches 1952-1969

Year	No. of Salmon	No. of Grilse	Total
1952	236,285	151,157	387,442
1953	211,935	141,782	353,717
1954	256,401	117,916	374,317
1955	252,109	136,015	388,124
1956	200,425	117,275	317,700
1957	217,572	196,974	414,546
1958	224,820	202,703	427,523
1959	270,006	115,962	385,968
1960	201,753	184,631	386,384
1961	179,926	156,257	336,183
1962	213,436	280,826	494,262
1963	267,280	166,922	434,202
1964	269,566	286,462	556,028
1965	219,999	213,826	433,825
1966	227,707	220,920	448,627
1967	261,534	342,597	604,131
1968	213,993	213,879	427,872
1969 [a]	195,000	405,000	600,000
Average 1952-68	230,867	190,947	421,815

a Estimated values based on returns received to 11th November.

Table 2 5-Year Rolling Averages for Scottish Salmon and Grilse Catches 1952-69

Period	Salmon	Grilse
1952-56	231,431	132,829
1953-57	227,688	141,992
1954-58	230,265	154,176
1955-59	232,986	153,785
1956-60	222,915	163,509
1957-61	218,815	171,305
1958-62	217,988	188,075
1959-63	226,480	180,919
1960-64	226,392	215,019
1961-65	230,041	220,858
1962-66	239,598	233,791
1963-67	249,217	246,145
1964-68	238,559	255,536
1965-69 [a]	224,446	279,244

a Includes estimated catches for 1969.

Table 3 Commercial Catches, 1952-68 - Salmon only

Year	February-May ('Spring')		June-September ('Summer')		'Spring' Catch as percentage of Annual Total
	Number	% of Average	Number	% of Average	
1952	128,219	162	72,683	75	63.8
1953	102,067	129	65,625	68	60.9
1954	132,138	167	70,755	73	65.1
1955	99,166	125	106,249	110	34.7
1956	74,709	95	76,342	79	49.4
1957	79,599	101	75,225	78	51.4
1958	77,986	99	84,811	88	47.9
1959	119,127	151	103,328	107	53.6
1960	67,589	86	80,893	84	45.5
1961	60,993	77	69,879	72	46.6
1962	48,305	61	102,973	107	31.9
1963	100,260	127	97,023	101	50.8
1964	60,082	76	142,148	147	29.7
1965	56,785	72	98,758	102	26.5
1966	52,935	67	111,220	115	32.2
1967	40,848	52	157,358	163	20.6
1968	42,883	54	125,435	130	25.5
Average 1952-68	79,041		96,512		

Table 4 Commercial Catches - 5-Year Rolling Averages 1952-68 - Salmon only

Period	February-May ('Spring')	June-September ('Summer')
1952-56	107,259	78,330
1953-57	97,535	78,839
1954-58	92,719	82,676
1955-59	90,117	89,191
1956-60	83,802	84,119
1957-61	81,058	82,827
1958-62	74,800	88,376
1959-63	79,254	90,819
1960-64	67,445	98,583
1961-65	65,285	102,156
1962-66	63,673	110,424
1963-67	62,182	121,179
1964-68	50,706	126,983

Table 5 Grilse Catch as a Percentage of Total Catch, 1952-1969

Year	Percentage
1952	39.0
1953	40.1
1954	31.5
1955	35.0
1956	36.9
1957	47.5
1958	47.4
1959	30.0
1960	47.8
1961	46.5
1962	56.3
1963	38.4
1964	51.5
1965	49.3
1966	49.2
1967	56.7
1968	50.0
1969 [a]	67.5
Average 1952-68	45.3

[a] estimated

Table 6 Monthly Commercial Catch as a Percentage of Annual Commercial Catch, 1952-1968 - Grilse only

Year	May	June	July	August	September
1952	0.7	27.2	65.1	6.8	0.1
1953	0.5	13.4	71.3	14.6	0.3
1954	0.2	8.5	74.0	17.0	0.3
1955	0.1	11.8	67.8	19.9	0.4
1956	0.3	12.8	69.0	17.7	0.2
1957	0.4	17.3	62.2	20.0	0.2
1958	0.2	7.4	67.4	24.6	0.3
1959	0.3	5.2	60.3	33.4	0.8
1960	0.4	7.0	64.4	27.2	1.0
1961	0.2	7.7	64.1	27.0	0.9
1962	0.2	7.6	65.5	26.0	0.7
1963	0.1	3.5	57.8	37.4	1.1
1964	0.5	5.0	51.6	40.1	1.9
1965	0.2	6.1	69.6	23.2	0.9
1966	0.1	2.2	54.2	42.0	1.4
1967	0.1	8.1	60.1	30.6	1.1
1968	0.4	7.1	60.1	30.5	1.5
Average 1952-68	0.3	8.8	62.8	27.2	0.9

Table 7 Average Weights (lb.) of Scottish Salmon and Grilse, 1952-1968

Year	Salmon	Grilse
1952	11.0	4.8
1953	10.4	5.3
1954	10.3	5.4
1955	9.8	5.0
1956	10.4	5.0
1957	9.7	5.1
1958	10.3	5.1
1959	10.2	5.2
1960	10.5	5.7
1961	10.1	5.3
1962	10.5	5.7
1963	10.6	5.4
1964	9.9	5.4
1965	10.7	5.7
1966	10.3	5.5
1967	10.5	5.7
1968	10.5	5.6
Average 1952-68	10.3	5.4

FIG. 1 5 YEAR ROLLING AVERAGES
ANNUAL SCOTTISH CATCH
SALMON ONLY

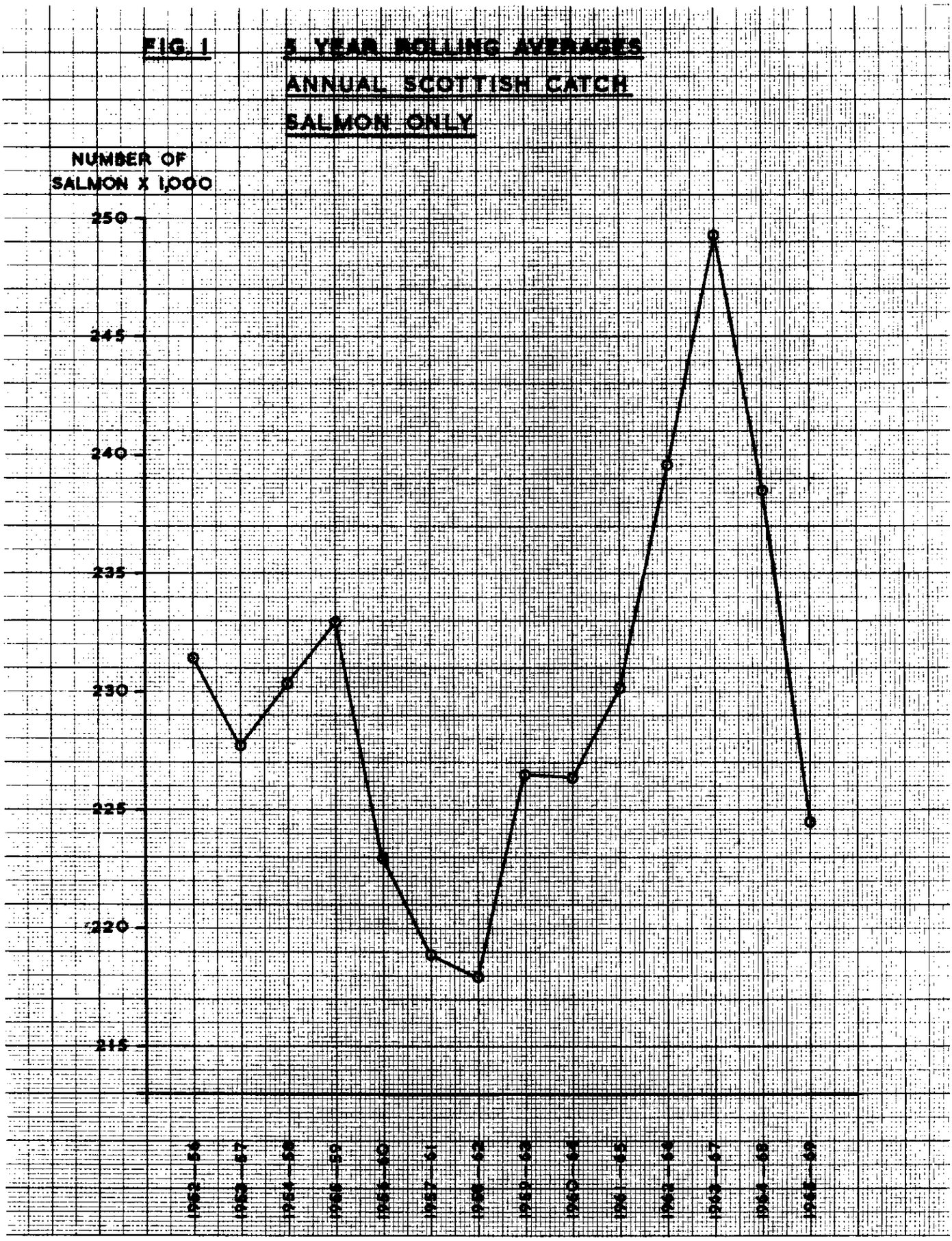
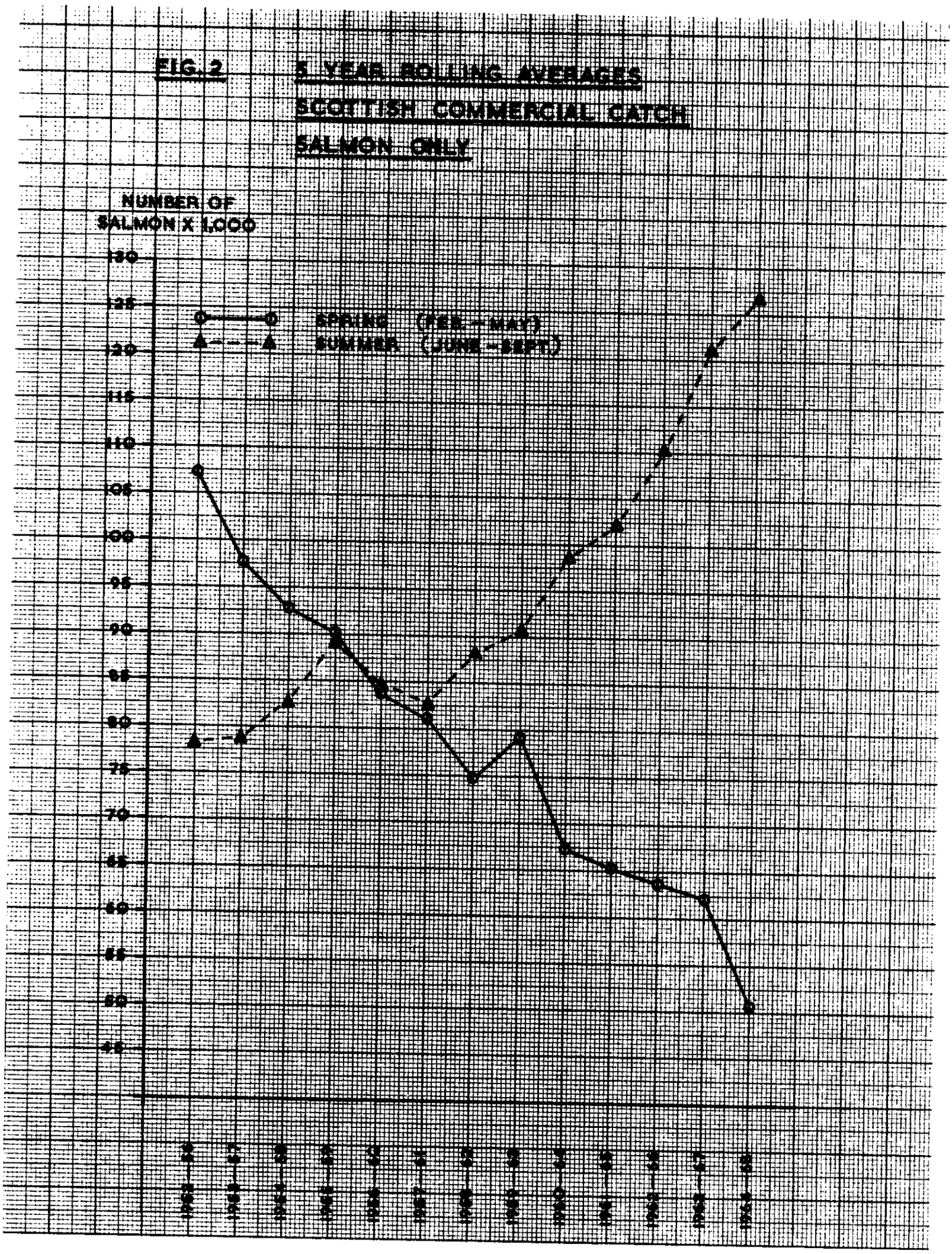


FIG. 2 5 YEAR ROLLING AVERAGES
SCOTTISH COMMERCIAL CATCH
SALMON ONLY



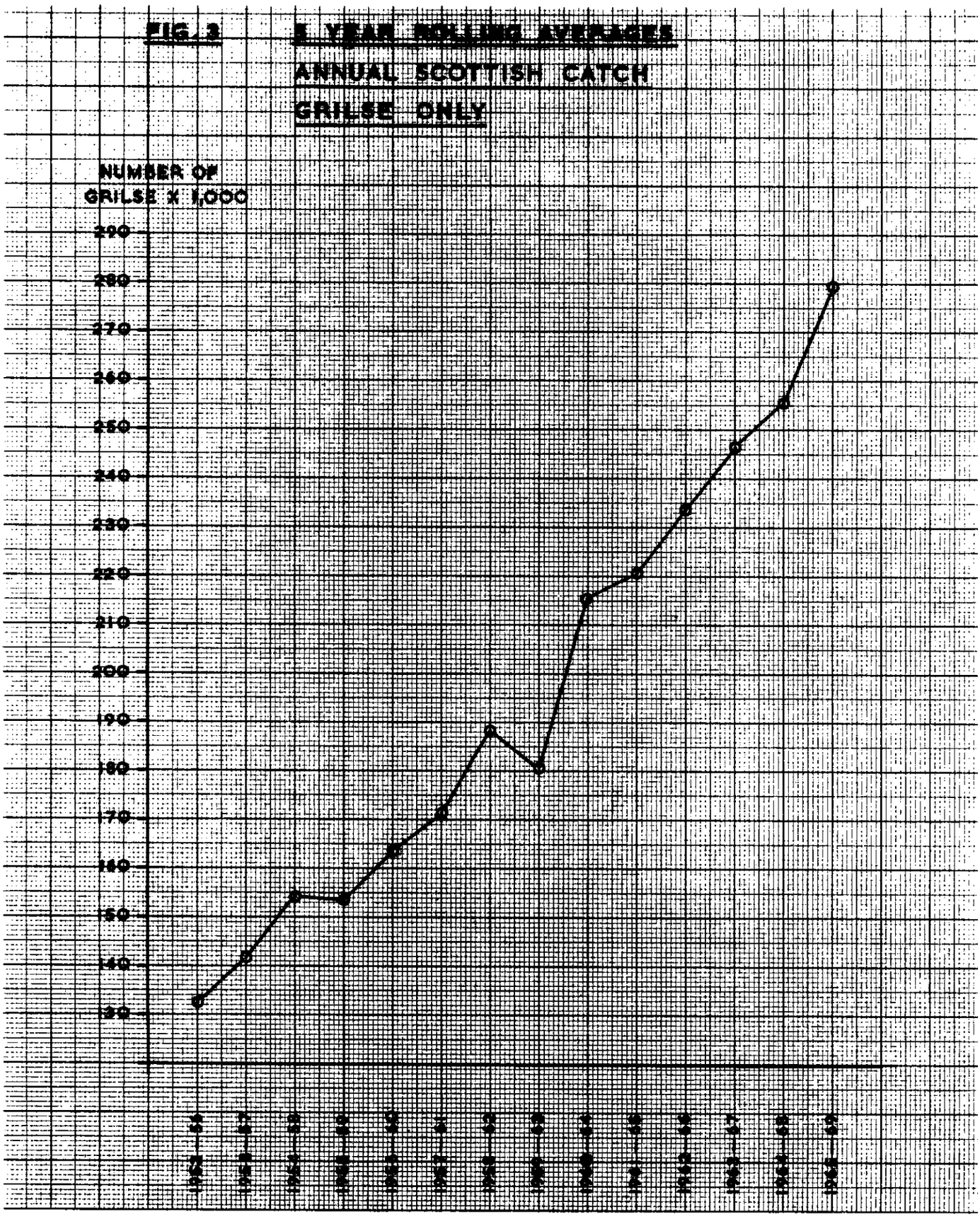


FIG. 2
5 YEAR ROLLING AVERAGES
ANNUAL SCOTTISH CATCH
GRILSE ONLY
NUMBER OF
GRILSE X 1,000
290
280
270
260
250
240
230
220
210
200
190
180
170
160
150
140
130