

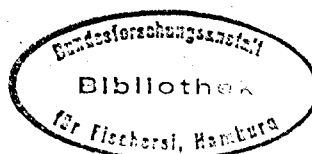
International Council for  
the Exploration of the Sea

C.M. 1991 / M :40

Anadromous and Catadromous  
Fish Committee

## SOME DATA ON THE POLISH DRIFT-NET SALMON FISHERY

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### ABSTRACT

The paper presents some data on Polish drift-net salmon fishery referring to the period 1985-1990.

Salmon catches and fishing effort have been taken into account. The paper presents also CPUE, mean weight of salmon during the fishing seasons and the location of capture sites.

### INTRODUCTION

Many factors have an influence on the level of salmon catches within the Polish fishery zone (Table 1). One of the most important factor is the lack of salmon stocking. It has a significant influence on catches in the open-sea fishery (where this species predominates decidedly). The other reason for low catches is the low price on the market, especially if compared with that of cod. As a result fishermen are not interested in salmon, particularly during the season of high cod catches in the spring.

The climatic conditions are of great importance. A severe winter makes salmon move southwards to waters uncovered by ice and to herring and sprat concentrations. On the other hand a mild winter, lack of ice cover, significant scattering of fish constituting salmon food cause a rapid landings decrease.

Operations with drift-nets depend on the weather conditions, especially during the autumn-winter season when storms restrict possibility of drift-net use.

There is another obstacle with making an adequate interpretation of the data. Some of them are incomplete, inaccurate or even purposely deformed. We are working now on a modern and efficient fishery information system.

#### MATERIAL AND METHOD

The basis of this paper are the data from two fishery companies - "Gryf" Fishing Co-operative in Władysławowo (1984-1990) and "Barka" State-owned Fishing Company in Kołobrzeg (1985-1990).

The data on CPUE of "Gryf" cutters from the 1984-1986 period were taken from Wicikowski and Kukliński (1987).

The number of "Gryf" cutters fishing on salmon varied in particular years (1987 - 8, 1988 - 3, 1989 - 10, 1990 - 3).

"Barka" in the 1985-1990 period had only one strictly salmon cutter.

#### CATCHES

Fishing with drift-nets is prohibited from 15 June to 15 September beyond four nautical miles measured from the baseline.

The results are shown in Figures 1 and 2. It can be seen that good catches were obtained between March and first half of June but the best month was May in almost every year.

The year 1987 was different because of its severe winter and very high catches during January and February. Catches in the second part of the year were usually lower than in the first one.

In Figure 2 it can be seen that cutters from Władysławowo were fishing salmon only from time to time, during the last four years. The year 1987 was exceptional as in April and May the fishermen achieved unusually good results. In 1989 the best period for catches was in autumn - from October to December.

#### FISHING EFFORT

The highest fishing effort was between March and the end of the fishing season, with the peak in May and June (Figures 3 and 4), but also in October and November.

Figures 9 and 10 show that the tendencies in the case of catches and fishing effort were similar. A different situation was observed in 1988 (Figure 9) when the cutter "Koł-80" was fishing hard from March with comparatively low catch per unit effort (up to May).

It is seen (Figures 9 and 10) how different were patterns of salmon stock exploitation in particular years. It is interesting that the "Gryf" cutters were not interested in salmon catching in the first quarter of the year (peak of the cod fishing season).

#### CATCH PER UNIT EFFORT IN NUMBERS AND KILOGRAMS

The data are shown in Tables 2, 3, 4 and also in Figures 5, 6, 7 (to illustrate general tendencies).

It can be seen that, in spite of important differences between the fishing seasons, the highest CPUE values were noted in March and April. Then they tend to drop until the end of the seasons.

Consequently, the reason for the high landings in May lies in big fishing effort rather than in CPUE.

The mean values of CPUE in fishing seasons differ very much. The best seasons were 1986/1987 and 1989/1990 (Figure 8).

#### MEAN WEIGHT OF SALMON IN CATCHES

It is very difficult to recognize similar tendencies in salmon mean weight when analysing Tables 5 and 6. During 1987 the mean weight of fish (Table 5) was more or less at the same level, in 1988 an increasing trend was observed in the period February - the end of the season. A similar situation existed in 1989 (from April to June). In 1990, on the other hand, the biggest fish were noted in March and then there was a constant decrease of salmon mean weight in the catches. During 1986 there were considerable fluctuations in mean weight.

It can be seen that at the beginning of the fishing seasons (in autumn) the mean weight of fish increased together with time (September of 1990 was an exception). The data from Table 6 are insufficient to say anything about it.

The percentage of two salmon weight classes in catches during the fishing seasons (data from "Barka" only) is shown in Figure 12.

The class "big" is over 3.5 kilograms and the "medium" one is between 2.0 and 3.5 kilograms.

The obtained results show that at the beginning of the season the fish of medium class were of great importance. Then their share clearly decreased. From spring to summer the share of these two weight classes usually fluctuated. The data from September of 1990 are exceptional but they come from only one landing (24 kilograms and 6 fish), so its representativeness is highly doubtful.

#### LOCATION OF CAPTURE SITES

The "Barka" salmon cutter operated mainly on fishing grounds located in the area between the Polish coastline and Bornholm Island, on the Słupsk Furrow and northwards of Władysławowo (Figure 11). This figure presents mean values from the 1985-1990 period of "Koł-80" landings.

The "Gryf" cutters operated first of all in an area northwards of Władysławowo.

#### DISCUSSION

The data presented come from two distant areas of the Polish coastline. The "Gryf" cutters were relatively numerous, but they did not fish for salmon only. "Barka" was represented by one cutter, but it fished exclusively for salmon.

It is very difficult to answer the question if these data are representative for the whole Polish salmon fishery. The data come from a part of total salmon landings. The importance of private-owned cutters is increasing now. They are scattered along

the Polish coastline.

But the results obtained confirm that an essential part of the catches is obtained in the second quarter of the year (Chrzan, 1980). According to Chrzan (1959) the landings are higher in April than in May, but it is not a rule. The data presented indicated that the peak of the landings moved to May during the last 30 years.

Comparing the results obtained by Danish fishermen (Anon., 1991 - Table 4.12.9) it can be noted that the CPUE of "Koł-80" is at a lower level. Only the 1986/1987 fishing season was comparable as a result of severe winter (salmon was numerous in the Polish fishery zone). However, Danish data in that table include also CPUE from a more effective fishery in waters around Gotland Island.

In the case of Figure 4.3.2. (Anon., 1991) the CPUE of "Koł-80" is lower compared with the Danish one from Sub.-Div. 24-25. Similar results were obtained only in the 1986/1987 and 1989/1990 seasons.

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Tab.1. Polish total catches of salmon

Rok	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Połowy	45	38	76	72	162	137	267	93	80	195

Tab.2. "Koł-80" - CPUE in kilograms per 100 nets

	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1985										7.2	21.3	
1986	2.1	10.6	47.9	9.6	36.7	25.5			34.3	27.5		
1987	63.7	42.5	84.6	37.1	28.7	20.7					30.5	
1988	5.9	0.6	7.5	5.2	8.2	13.4						
1989				28.0	18.9	5.1						
1990		24.1	47.2	59.0	51.9	42.1			4.8	19.5	22.6	7.8

Tab.3. "Gryf" cutters - CPUE in kilograms per 100 nets

	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1984				9.3	10.0	8.3						
1985			147.7	109.5	23.3	20.6				24.7	16.8	
1986			42.0	18.3	40.5					37.9	32.8	55.4
1987		30.0	48.5	94.6	61.2	12.3				51.9	44.8	
1988					21.3	23.0						
1989	38.2	18.6		46.2	33.9				42.7	27.9	37.4	37.3
1990	27.5			141.1								

Tab.4. "Koł-80" - CPUE in numbers per 100 nets

	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1985										2.5	4.9	
1986	0.4	2.3	10.9	1.8	8.4	3.5			9.9	6.8		
1987	15.0	10.6	20.9	8.4	6.5	5.2					3.3	
1988	1.6	0.2	2.2	1.3	1.5	1.9						
1989				10.4	5.2	1.1						
1990			9.9	15.6	15.4	12.6			1.2	6.1	6.1	1.8

Tab.5. "Koł-80" - Mean weight of salmon in catches

	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1985										2.9	4.4	
1986	5.3	4.6	4.4	5.3	4.4	7.3			3.5	4.0		
1987	4.3	4.0	4.1	4.4	4.4	4.0					7.6	
1988	3.7	3.0	3.4	4.0	5.5	7.1						
1989				2.7	3.6	4.6						
1990			4.8	3.8	3.4	3.3			4.0	3.2	3.7	4.3

Tab.6. "Gryf" cutters - Mean weight of salmon in catches

	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1988					4.6	4.6						
1989	5.1	5.3		5.0	3.8				4.7	6.6	5.2	5.8
1990	6.1			7.5								

Fig.1. Salmon catches of -Kol-80-  
in kilograms

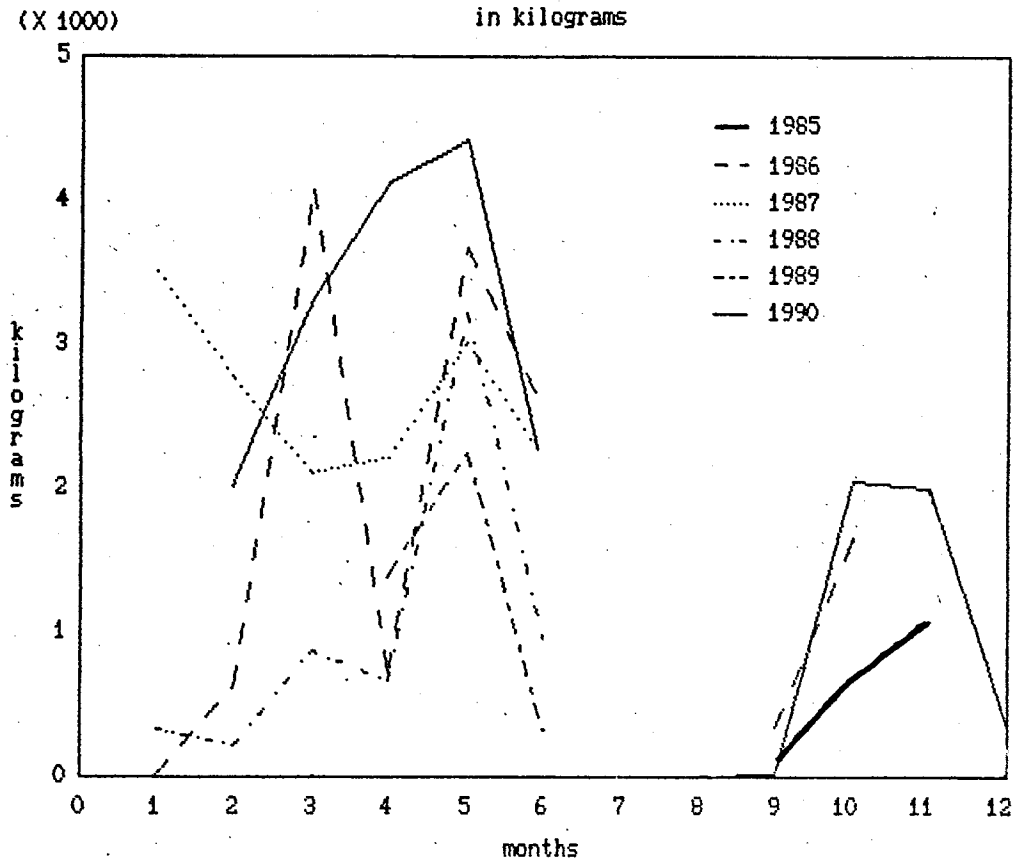


Fig.2. Salmon catches of -Gryf- cutters  
in kilograms

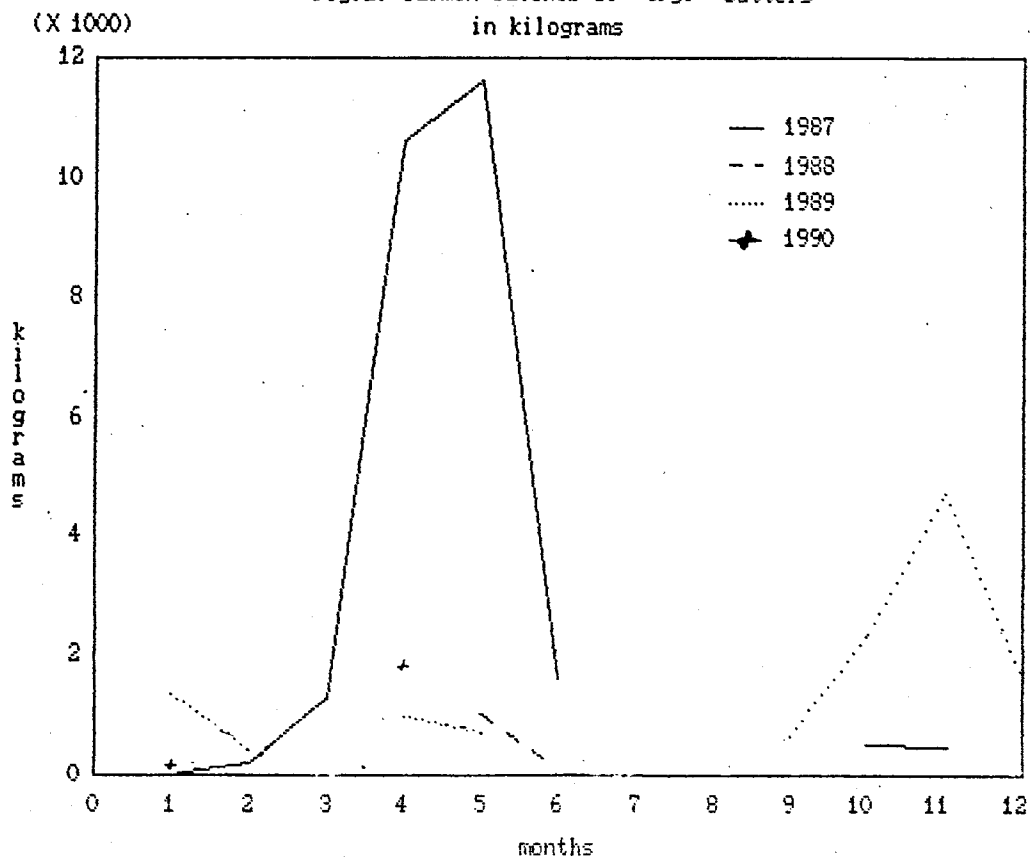


Fig.3. Fishing effort of -Kol-80-  
in number of nets

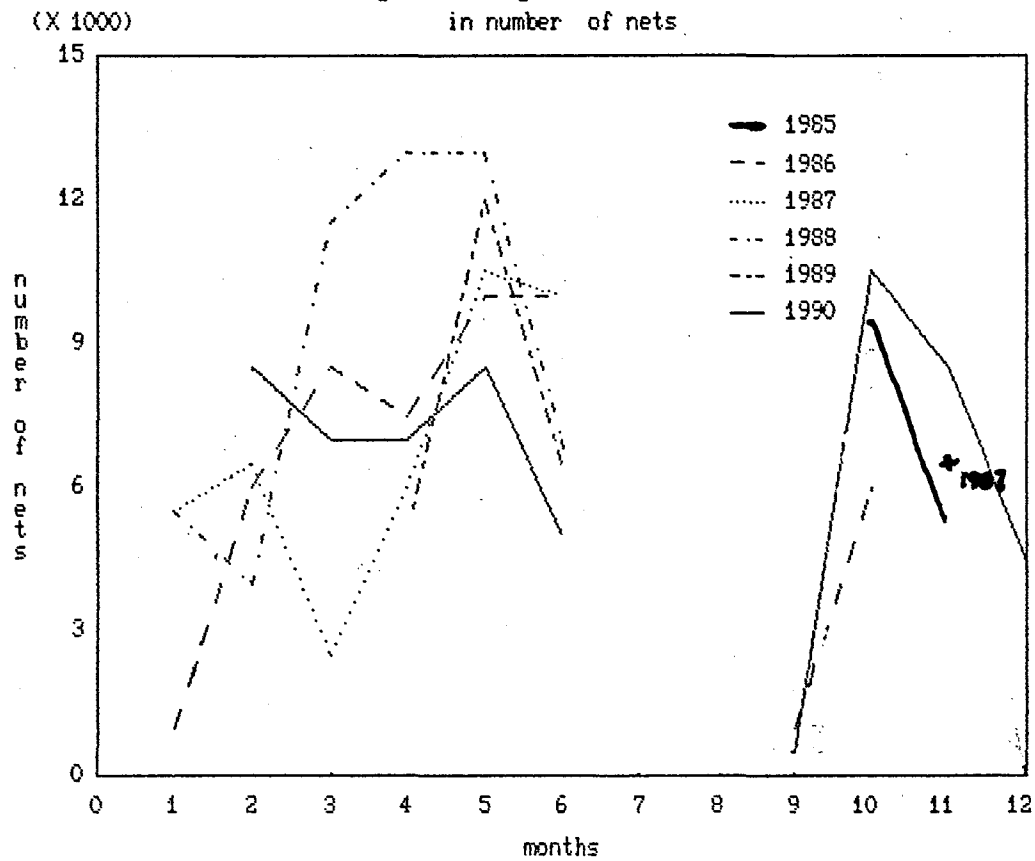


Fig.4. Fishing effort of -Gryf- cutters  
in number of nets

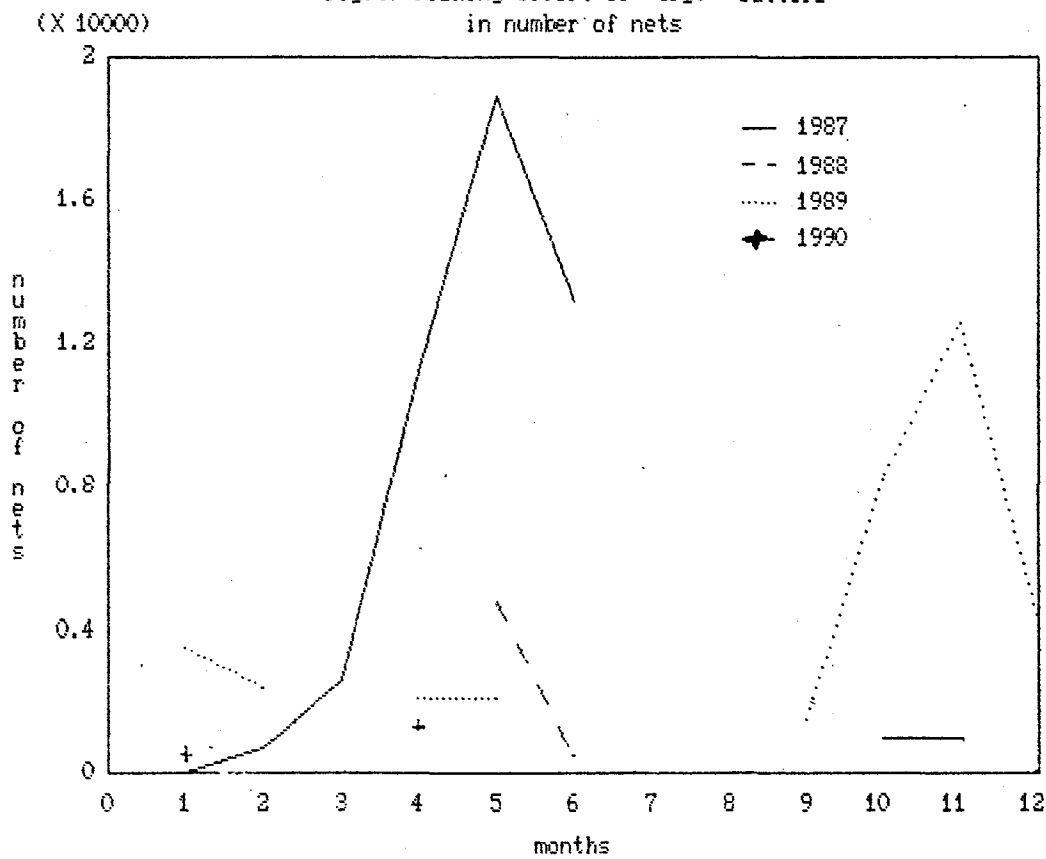


Fig.5. CPUE of -Kol-80-  
in kilograms

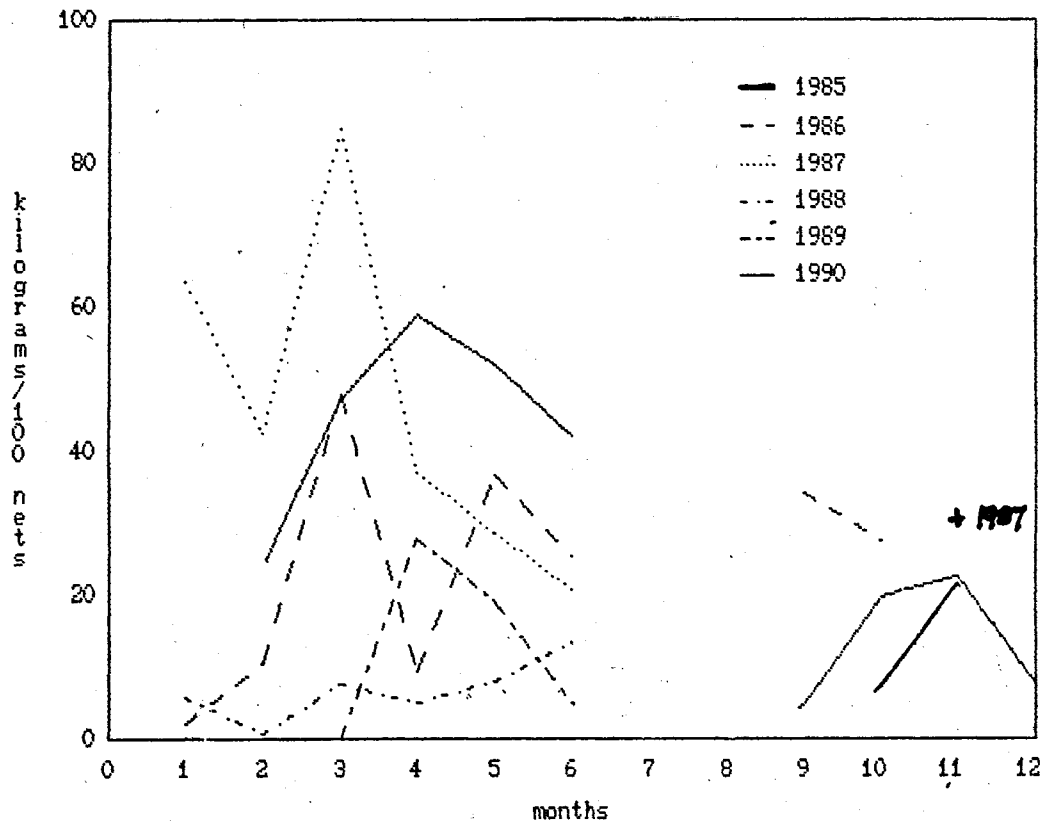


Fig.6. CPUE of -Gryf- cutters  
in kilograms

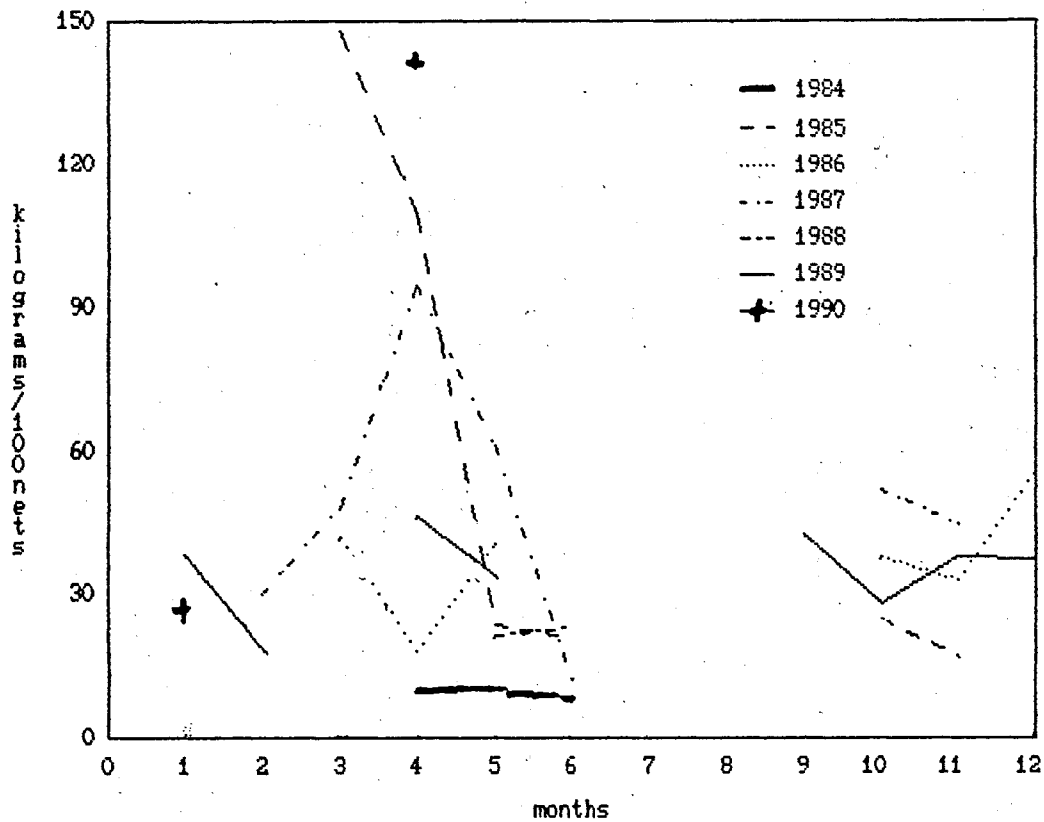


Fig.7. CPUE of -Kol-80-  
in numbers

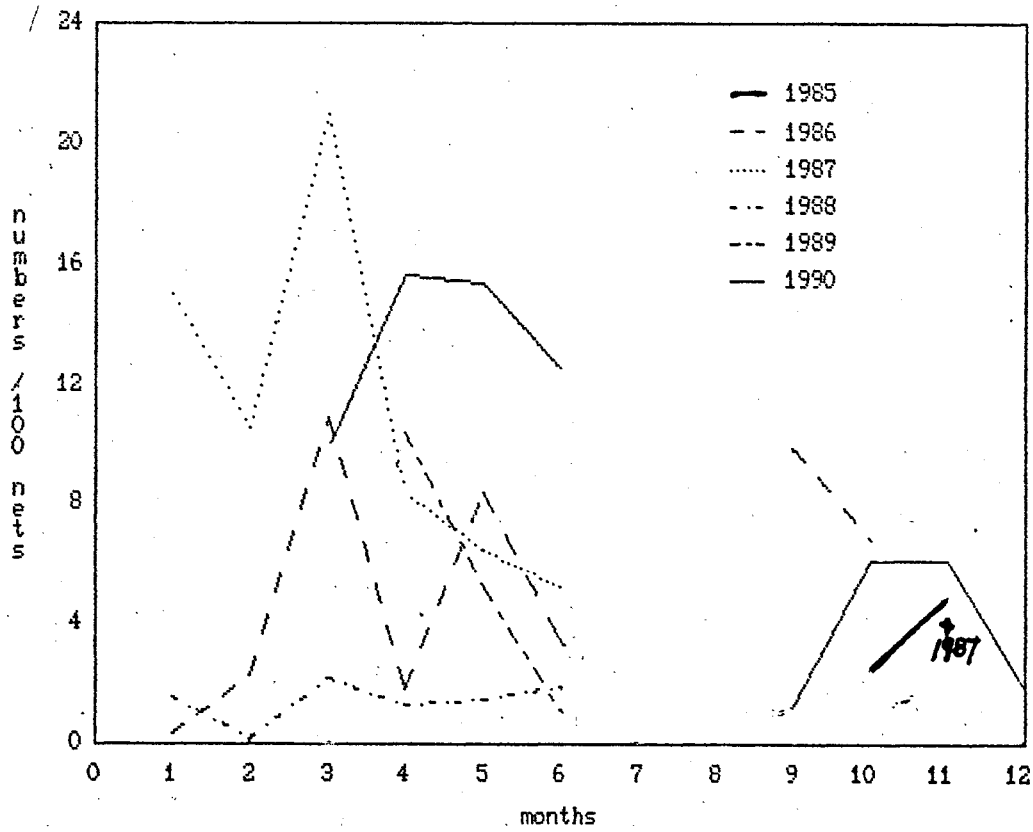


Fig.8. CPUE of -Kol-80-  
in fishing seasons

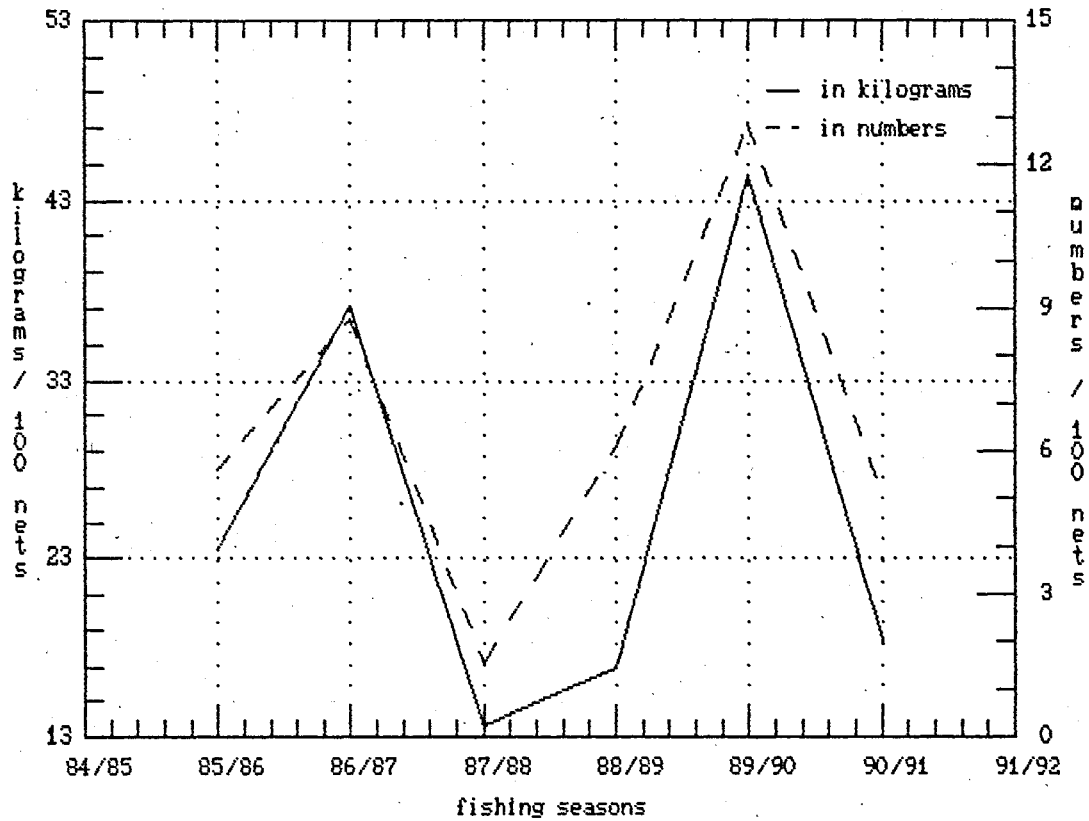


Fig.9. Catches and fishing effort  
of -Kol-80-

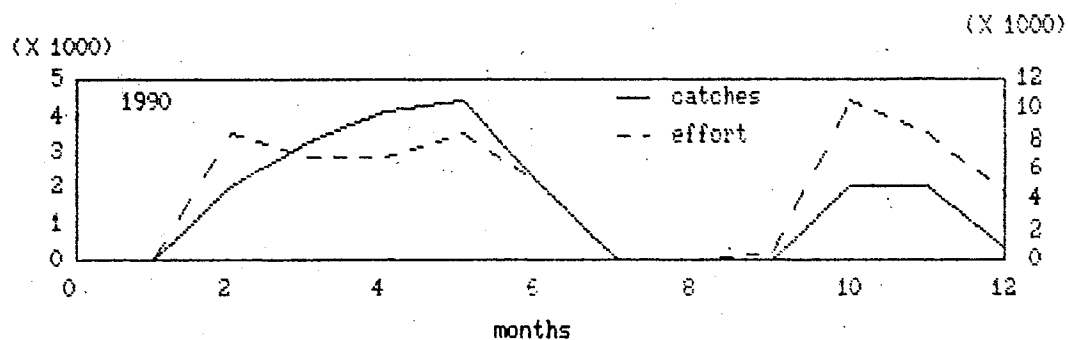
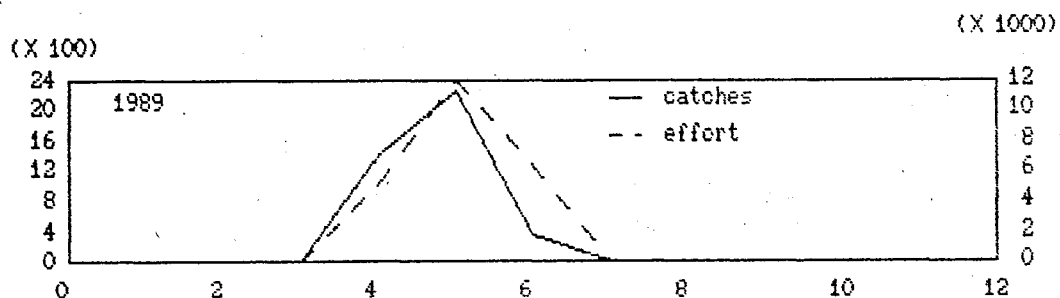
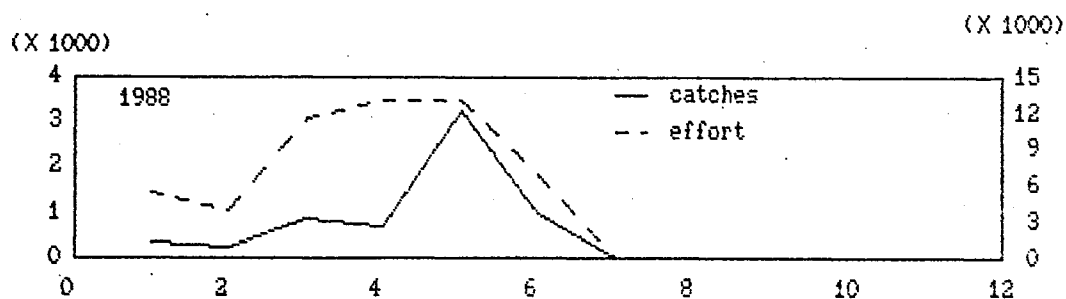
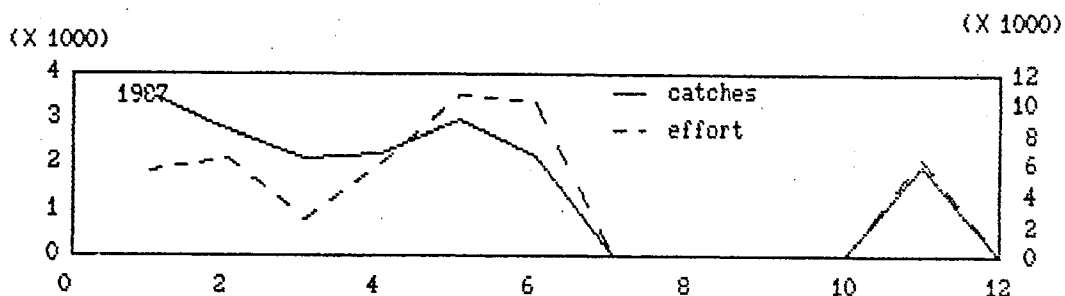
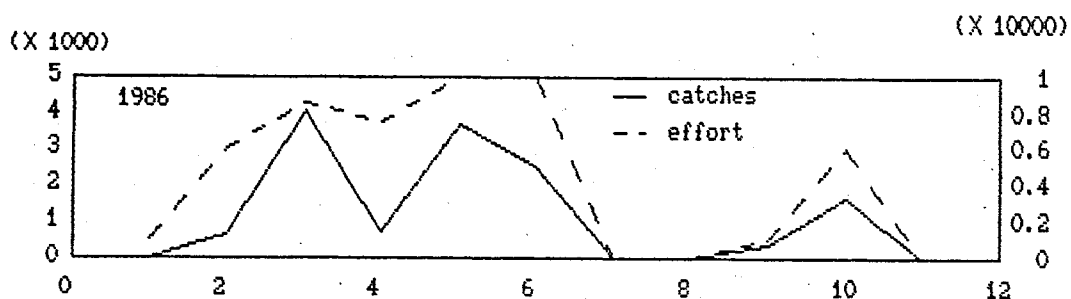
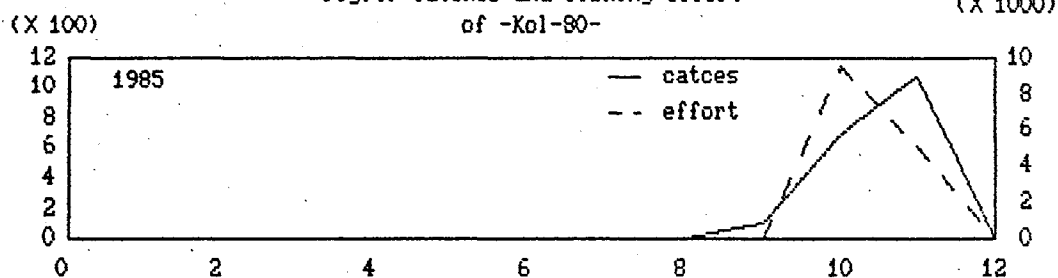


Fig.10. Catches and fishing effort  
of -Gryf- cutters

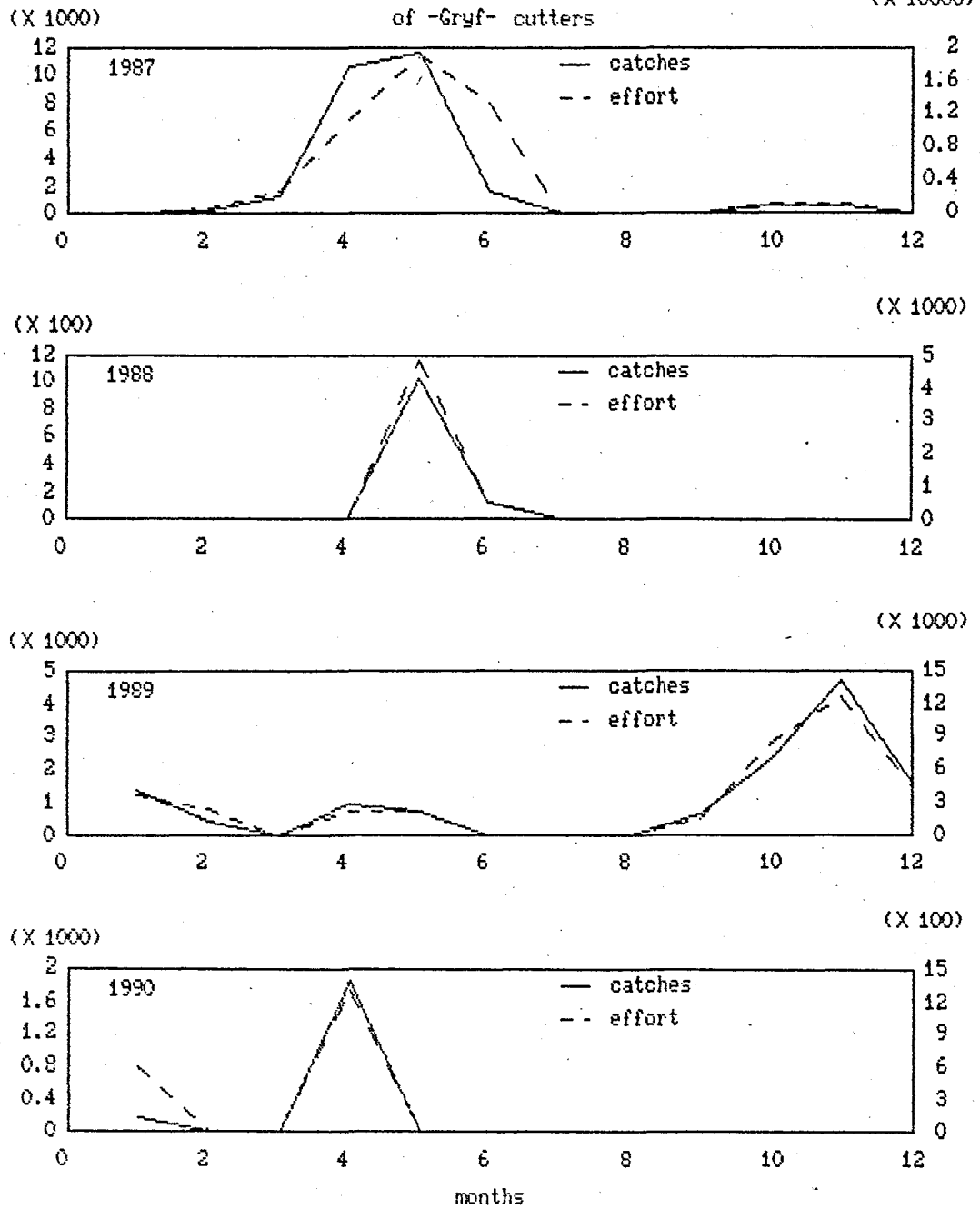


Fig.11. Location of capture sites.

Mean values of "Koł-80" landings (1985-1990)

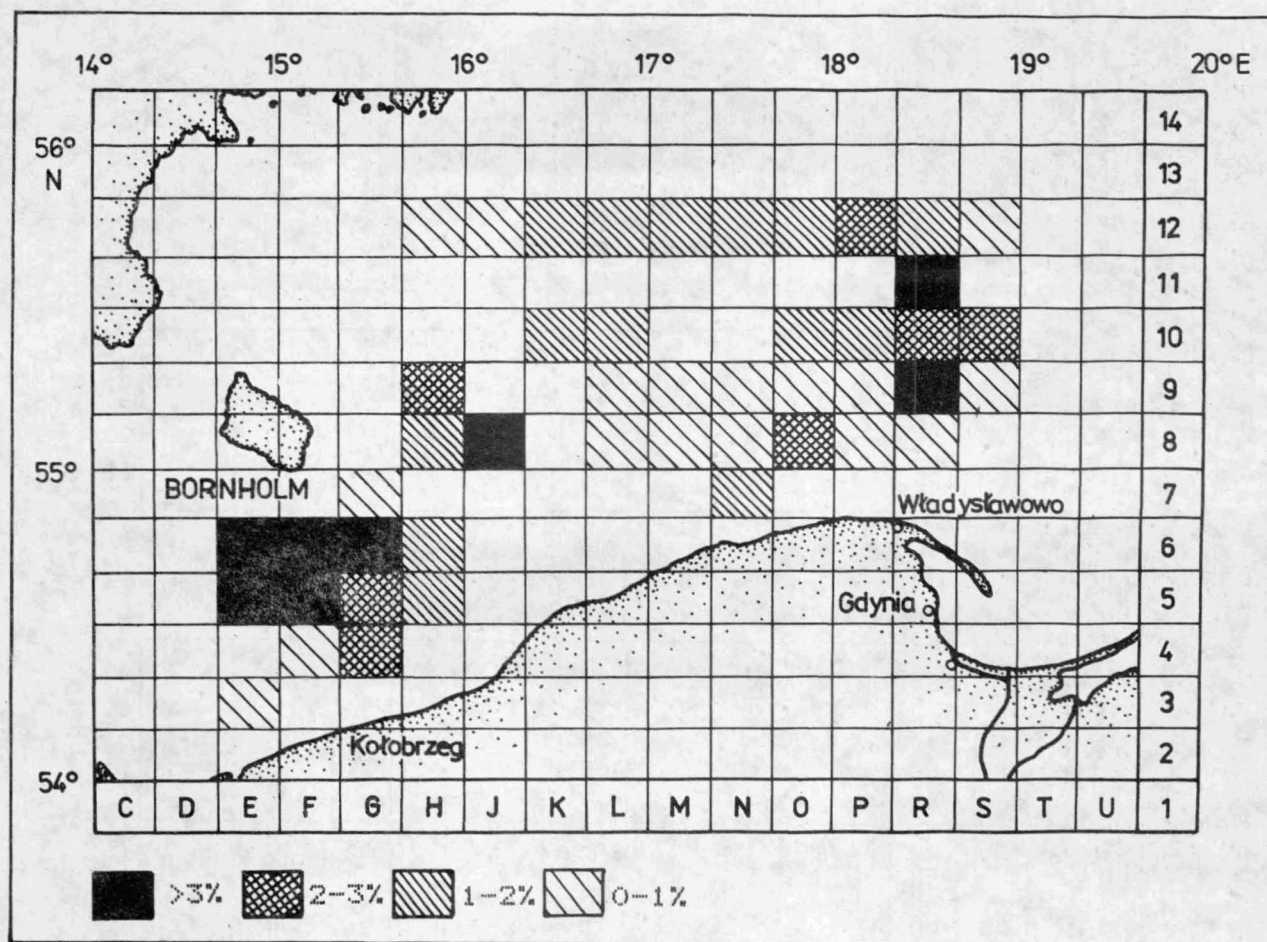


Fig.12. Percentage of two salmon weight classes  
in fishing seasons - Kol-80-

