



**An Roinn Turasoireachta, Iascaigh
agus Foraoiseachta**

**THE FAT CONTENTS OF IRISH MACKEREL
DURING 1984/85 AND 1985/86**

by

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The fat contents of Irish mackerel in recent years (1983-1984) have been published by McArdle, Barnwall and Nolan (Fishery Leaflet 129). Since then, routine analyses of mackerel including fat content, have been continued during the 1984/85 and 1985/86 seasons and the results have been circulated to the trade. Because processors now attach considerable importance to fat contents, and because there have been suggestions that the fat content during 1985/86 may have been abnormally high, it has been decided to publish the complete results of all samples analysed during the last two fishing seasons.

Methods

The fat content was analysed using the same method as that employed in previous years - i.e. a technique developed by Foss Electric, Denmark and which is based on the extraction of fat from minced fillets. As has been shown by McArdle et al (1985) there are considerable differences between the fat content of different sizes of mackerel. Separate analyses were therefore carried out, wherever possible on small, medium and large fish. These categories may be defined as follows:-

- Small - more than 5 fish per kg
- Medium - between 2 and 5 fish per kg
- Large - less than 2 fish per kg

The average percentage fat contents for each size category per month during the main fishing seasons are shown in the following table for 1983/84, 1984/85 and 1985/86

	Small			Medium			Large		
	83/84	84/85	85/86	83/84	84/85	85/86	83/84	84/85	85/86
Oct	18	22	-	26	24	28	28	29	34
Nov	18	21	22	-	19	30	28	29	33
Dec	17	22	19	24	-	30	24	26	30
Jan	13	15	16	22	22	28	21	28	28
Feb	13	14	12	16	18	22	21	20	26
Mar	12	13	11	14	-	15	18	18	16
Apr	10	8	-	12	-	-	12	13	-
May	4	-	4	-	-	5	-	-	12

As can be seen there are considerable differences between the fat content of the various categories - small fish having considerably less fat than large fish. There appears also to be considerable difference between the fat content of the medium and large fish although this does not appear to have been as noticeable in 1985/86 as during 1984/85. For this reason it is not sufficient when speaking about fat content to refer only to an average level. Fat content must be related to information about the size distribution of the catch.

There is also a gradual decrease in fat content as the season progresses. This is because fish are utilizing their fat reserves to survive the winter and also to prepare for spawning in spring and early summer.

Some samples which have been examined during March and April have a particularly low fat content (see Table). These fish had already commenced spawning. This is particularly apparent in the samples landed in Castletownbere during 1986 by boats fishing west of the Blasket Islands. The results of the fat content analyses for all the various samples from the different areas are shown in Tables 1-3.

Apart from the differences that occur between the various categories there are also differences between the average monthly values in each year. Processors have commented many times during 1985/86 about abnormally high fat contents particularly from fish taken off the northwest of Scotland (i.e. the St. Kilda, Rona, Shetlands fishery). Difficulties were experienced in filleting and freezing these fish during the winter. The average monthly figures show in fact that during October to December 1985 the fat contents were between 4% and 5% higher than in 1984. The differences decreased in January 1986. Some high fat contents of more than 30% were also recorded in January 1985 as well as in January 1986. However the February 1986 figure was again about 6% higher than the previous year. These differences were also evident in the fat contents of the medium fish but were not apparent in those from the small fish. It is also apparent that the figures from the 1983/84 season and the 1984/85 season were much more similar to one another.

The reason for the very high fat contents experienced in 1985/86 may be connected with the extensive changes that have occurred in the geographical distribution of the areas fished by Irish boats during that season. During October to December boats fished as far north as 60 N (i.e. around the Shetland Islands). It is known that the average weights at age for mackerel taken in the North Sea are approximately 30% higher than those taken in what is called the western area. The difference must be the result of richer feeding in the North Sea and adjacent waters and the mackerel taken by Irish boats during 1985/86 must have benefited from this.

Table 1: Fat contents of mackerel from ICES Div. 6A

Date	Area	%Fat	Size	
1985 Jan	6	Off St. Kilda	26	Medium
			30.5	Large
	10	N.W. Flannans I	20	Medium
	14	N.W. Flannans I	20.5	Medium
	14	N.W. Flannans I	26.5	Medium
	20	West of St. Kilda	26	Medium
	20	West of St. Kilda	28	Large
	29	West of Aranmore I	14.5	Medium
31	Off Tory	18	Medium	
1985 Feb	3	Off Aranmore	18.0	Medium
	3	West of Aranmore	22.0	Large
	6	West of Aranmore	15.0	Small
	6	West of Aranmore	20.0	Large
1985 Mar	25	Staunton Bank	13.5	Small
1985 Apr	11	West of Aranmore	8.0	Medium
			13.0	Large
1985 Oct	30	North Minch	26.0	Small
		"	28.0	Medium
		"	34.0	Large
	31	West Shetland	34.0	Large
		"	30.0	Medium
	1985 Nov	11	West Shetland	22.8
"			34.0	Medium
"			34.0	Large
16		West Shetland	21.0	Small
		"	30.0	Medium
		"	30.6	Large
21		West Shetland	20.0	Small
		"	32.0	Medium
24		West Shetland	20.0	Small
		"	30.0	Medium
		"	34.0	Large
30		West Shetland	27.4	Medium
	"	28.6	Medium	
	"	33.0	Large	

Table 2: Fat contents of mackerel from ICES Div. 7 J-K

<u>Date</u>	<u>Area</u>	<u>% Fat</u>	<u>Size</u>
1985 Feb 19	West Blaskets	18.5	Medium
20	West Blaskets	27.5	Large
25	West Blaskets	17.0	Medium
	" "	20.5	Large
1985 Mar 8	West Blaskets	17.0	Medium
12	West Blaskets	17.5	Medium
25	West Blaskets	13.0	Medium
1985 Apr 18	West Blaskets	4.5	Medium
30	South of Dursey	7.0	Medium
30	South of Dursey	12.0	Medium
1986 Feb 19	West of Blaskets	21.0	Medium
	"	21.0	Large
1986 Mar 4	West of Blaskets	17.5	Medium
7	South Dursey I	7.0	Small
	"	11.0	Medium
	"	8.0	Large
21	South Dursey I	7.0	Small
	"	5.0	Medium
	"	7.0	Large
1986 May 5	South of Castle- own	4.0	Small
	"	5.0	Medium
	"	12.0	Large

Table 3: Fat contents of mackerel from ICES Div. 7b

<u>Date</u>	<u>Area</u>	<u>% Fat</u>	<u>Size</u>
1985 Feb 18	West Eagle I.	13.5	Small
19	West Blacksod Bay	18.4	Medium
	West Black Rock	19.5	Large
20	Eagle I.	16.5	Medium
	"	20.0	Large
1985 Mar 13	Slyne Hd	12.0	Small
13	Slyne Hd/Eagle I.	23.0	Medium
21	"	17.5	Medium
29	Slyne Hd	14.2	Large
	"	10.7	Small
1986 Feb 5	West of Achill	13.8	Small
	"	23.8	Medium
	"	19.4	Large
9	West of Achill	23.0	Medium
	"	28.5	
16	off Slyne Hd	23.0	Medium
	"	28.5	Large
28	off Clare	24.0	Small
	"	20.0	Medium
	"	27.0	Large
1986 Mar 1	West of Aran I.	27.0	Large
4	"	19.5	Medium
12	West of Aran	18	Medium
	"	19	Large
13	West Slyne Hd	21	Medium
	"	24.5	Large