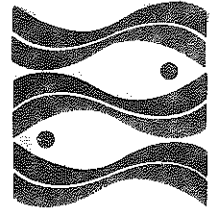


485.



**An Roinn Turasoireachta, Iascaigh  
agus Foraoiseachta**

**FISH KILLS IN IRELAND IN 1985**

by

**Edward Fahy**

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Fish kills reported by the water pollution officers of the Regional Fisheries Boards in 1985 are evaluated as were similar incidents in 1983 and 1984. Trout Salmo trutta was the species most widely implicated and the suspected cause of death was oxygen depletion resulting from agricultural activities. The small number of kills (37), compared with other years, was attributed to weather conditions and particularly to high rainfall in 1985.

Contrary to expectation, the average numbers of fish killed in an incident were higher and the channel lengths affected were twice as long as in 1983 and 1984. Whether these findings represent a new pattern of water pollution is not known.

## Introduction

Fishery Leaflet 128 presented an analysis of fish kills in Ireland in 1983 and 1984. Kills were characterised by a number of criteria and certain of these were common to the majority. As a result it was possible to describe the typical fish kill as one involving about one hundred fish in a channel length of less than 3 km. Trout were the species most likely to be involved. Kills were usually a summer phenomenon and the majority of casualties resulted from oxygen depletion caused by the inability of the water body to cope with biodegradable material

The year 1985 had a different kind of weather pattern. Rainfall, in particular, was higher during the summer months. The data presented here derive from the same sources and are evaluated in the same way as in 1983 and 1984. This leaflet will be a comparison of the nature and distribution of fish kills in 1985, a wet year.

## Origin of report

Fish kill reports came from the water pollution officers of the Regional Fisheries Boards. In all 37 incidents were reported in 1985. These reports were subject to the same disadvantages as incidents logged in 1983 and 1984.

## Fish kills: an analysis in 1985

The standardisation of data collected in 1983, 1984 and 1985 enables comparison of the earlier survey with this one. A list of fish kills is provided in the appendix.

## Where kills occurred: the waterbody

One of the kills reported in 1985 occurred in a canal, one in a fish farm and one in a lake. As in 1983 and 1984 the majority (92%) took place in flowing waters.

## When kills occurred

Fish kills were distributed by month in 1985 as follows:

Month	Number	Percentage
January	0	0
February	0	0
March	1	3
April	2	5
May	3	8
June	22	59
July	6	16
August	1	3
September	0	0
October	0	0
November	1	3
December	1	3

In 1985 therefore there was a concentration of incidents in the summer months. June and July accounted for 75% of the total, as opposed to 68% in 1983 and 60% in 1984.

#### Numbers killed

This character is presented below together with similar data from the previous years :

Numbers in kill	1985 kills		1983 & 1984 kills
	number	percentage	percentage
1 - 9	2	11	14
10 - 99	5	28	46
100 - 999	9	50	33
> 1000	2	11	6

Only 18 reports contained details of the numbers and these suggest a tendency towards larger kills.

#### Channel lengths affected

In 1983 and 1984 the average length of channel imarked by a fish kill was calculated for each of the peak months of June, July and August and an overall average figure was also given. This was 2.9 km in 1983 and 2.7 km in 1984. In 1985 the average length increased substantially to 6.8 km (31 observations).

### Agency of kills

As in 1983 and 1984, oxygen depletion (sometimes associated with ammonia toxicity) was the agency of kill in the majority of cases. The suspected source in most incidents was silage or slurry and there was one case in which a toxic spray was implicated.

### DISCUSSION

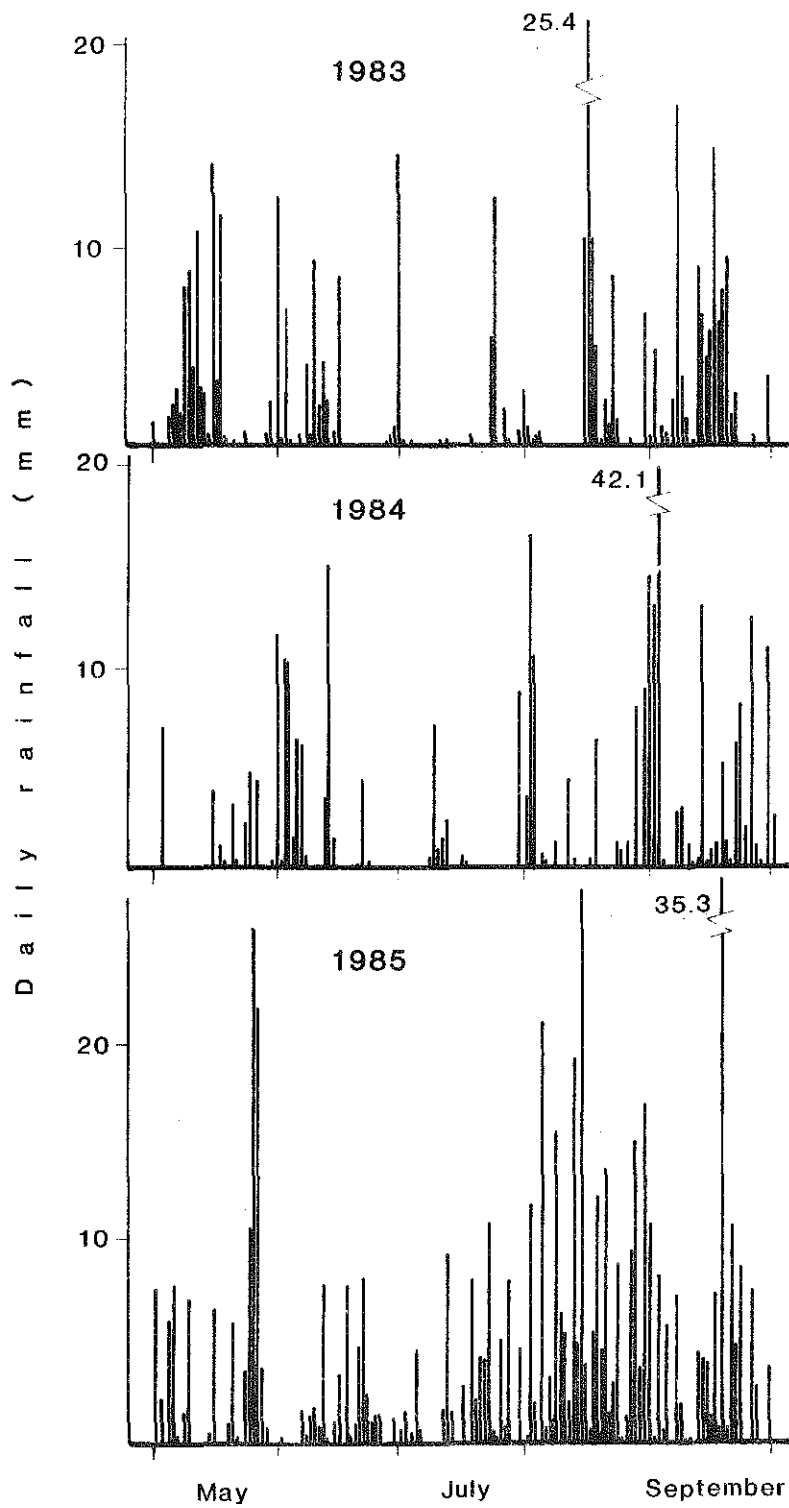
Agriculture was the main suspected cause of fish kills in 1985 and trout was the species most widely implicated; the majority of mortalities are supposed to have been caused by deoxygenation.

The significance of aspects of weather, and particularly rainfall, to fish kills has been argued in the previous Leaflet (128) and it is clearly demonstrated by events in 1985. A daily rainfall record for the Galway Synoptic Weather Station, kindly provided by the Agro-meteorological Section of the Meteorological Service, for the peak polluting months of May to September for the years 1983 to 1985 inclusive, is given in Fig. 1. A lower incidence of kills reflects higher water levels in 1985 and, appropriately, the driest month, June, was marked by 60% of kills for the entire year.

Thus, rainfall mitigated the effects of such consequences of biodegradable wastes as are expressed as fish kills. This is generally in keeping with the conclusions of the previous report which suggested that a large proportion of fish kills results from a temporary imbalance between the capacity of waters to absorb waste and the effluent loads received.

Arising from this explanation of the causes of fish kills it might be expected that incidents in 1985 would be of less consequence than in previous years. Contrary to expectation, there was a shift towards heavier mortalities and the average channel length affected was greatly increased. However, the 1985 sample is small and the environmental conditions in which it arose were uneven during the summer months.

Fig.1 Daily rainfall at Galway Synoptic Weather Station.



APPENDIX

Details of 37 fish kills reported in Ireland in 1985

<u>Catchment</u>	<u>River/Tributary</u>	<u>Date</u>	<u>Location</u>	<u>Species involved</u>
			<u>Dublin</u>	
Tolka	Tolka	15 June	Blanchardstown Br.	Trout
			<u>Wexford</u>	
Owenavorrhagh	Owenavorrhagh	20 June	Ballycanew	Trout
			<u>Waterford</u>	
Barrow	Athy Canal	19 Nov.	Athy	Loach
	Duiske	21 May	Tinnahinch	Trout, Salmon, Lamprey, Eel
	Stradbally R.	1 June	D/S Stradbally	Minnow, Loach, Gudgeon, Trout, Salmon
Nore	Arigna	24 July	Rathmoyle, Goulstown, Tullaroan townlands	Trout, Salmon, Minnow, Roach
	Clogh R	18 June	Clogh	Trout
	Dinin R	14 July	Castlecomber, Co. Kilkenny	Trout
	Erkina R	3 June	Rathdowney, Co. Laois	Trout
	Glory R	22 June	Dunnamaggan, Co. Kilkenny	Trout
	Gully R	28 June	Durrow, Co. Laois, near Kyle townland	Trout (Rainbows)
Suir	Ballybeg	17 May	Kileen, Ballinonty	Trout
	Clodia R	1 June	Finahy, Upperchurch, Thurles	Trout, Salmon
	Lingaun R.	4 July	Cregg, Carrick on Suir	Trout
	Suir	18 June	Near Clonmore, Templemore	Trout
Tramore Bay	Belle Lake	8 April	Tramore	Rudd
			<u>Cork</u>	
Bandon	Garrane Lakes	13 March	Drimoleague	Trout
Blarney	Blarney	21 July	Monard	Trout
Kilbritten	Kilbritten	24 July	Maulmane Br.	Trout, Salmon
			<u>Galway</u>	
Corrib	Cross/Garracloon springs	8 August	Cross, Co. Mayo	Trout, Stickleback

APPENDIX cont.

<u>Catchment</u>	<u>River/Tributary</u>	<u>Date</u>	<u>Location</u>	<u>Species involved</u>
			<u>Ballyshannon</u>	
Erne	Ballintra River	14 June	Ballybay town	Trout
	Bunoe	20 June	From Deapy creamery to Annalee	Trout
	Bunoe R.	10 July	Howats to Annalee	Tench
	Cavan town river	2 December	Derrygid to Coal Pit Lake	
Erne/Dromore	Dromore	4 June	Ballybay town	Rudd/Roach hybrids
Erne/Laragh	Laragh	14 June	Clifferna	Trout, Roach
			<u>Letterkenny</u>	
Glennagannon	Glennagannon & Trib	9 April	Tullanree	Salmon, Trout
			<u>Dundalk</u>	
Dee	Killary R	7 June	From Killary Br. Upper	Trout, Salmon
	Kilmainham Wood R	10 June	Moyhill to Kilmainham Wood	Trout
Fane	Milltown lake	14 June	Castleblaney	Trout
	Mulladuff R	13 June	Mulladuff	Trout, Roach
Glyde	Trib to Upr Glyde	6 June	Stream to Moynalty Lake	Trout, Salmon
			<u>Drogheda</u>	
Boyne	Kinnegad R	3 June	Kinnegad town to Boyne	Trout
	Knightsbrook R	23 June	Moynalty - Laracor	Trout
Boyne/Castle Lake	Lear	12 May	D/S Lear Bridge	Bream
Boyne/Blackwater	Park R	19 June	Billis	Trout