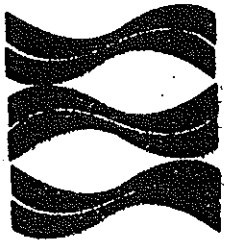

ROINN NA MARA

FISH KILLS IN IRELAND IN 1990

by

Christopher Moriarty

Fishery Leaflet 149

Dublin 1991

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Summary

The total of 52 fish kills in 1990 was a marked improvement over the previous year when 111 were reported. Although this result was no better than that for 1988, it represented a considerable achievement because 1988 experienced a wet summer with high water flows while 1990 was exceptionally dry. Because of the poor dilution of pollutants, low river flows are usually associated with an increase in the number of fish kills.

All three traditional causes of fish kills, agriculture, industry and sewage showed a downward trend. These have all been subjected to a campaign of information and enforcement of the regulations. This has brought about an increased awareness of the hazards and major improvements have been made in reducing the risks of accidental spillages.

In spite of these efforts, the problem remains very serious. Although so much better than the peak figures of more than 100 fish kills in a single year, the level of 50 is unacceptably high. The analysis of the year's results shows that agricultural sources continue to cause extremely serious damage. The problem lies partly in the fact that a single accidental discharge into a salmonid nursery river can kill many thousands of fish for as much as 20 kilometres downstream.

If the downward trend of problems from agriculture and industry can be maintained, the greatest threat in water pollution is likely to be that of enrichment, above all the release of excessive phosphate into the environment. Two sources, fertilizer and domestic sewage, are implicated. The sewage element can be controlled by upgrading treatment plants wherever necessary. The reduction of phosphate run-off requires continued attention to the information campaign for farmers to explain the need for extreme care in fertilizer application. Remedial action in this case increases farm profits since all the fertilizer which pollutes the rivers is lost to the land.

Trends since 1983

The overall picture was one of a marked improvement over 1989, with fewer than half as many incidents. The figure was approximately equal to that for 1988 and well below the average since 1983 when systematic recording of the incidents began (Table 4). Of these eight years, 1987 was the worst with 122 fish kills and the situation then was so serious that a major anti-pollution drive was initiated by the Government. The result of this initiative, in which pollution officers from Regional Fishery Boards and from Local Authorities played the main part, was a dramatic improvement in 1988.

The number of incidents increased again in 1989 but in this case a long spell of dry weather in summer was blamed rather than any deterioration in pollution control. The relatively low figure of 52 in 1990 marked a very considerable achievement because there were even longer periods of drought in that summer than in 1989. The overall trend therefore is strongly downwards.

All three major sources in the graph in Figure 1 showed an improvement over 1989. The upward trend for industrial fish kills in progress since 1985 was reversed. The pie diagrams in Figure 2 which compare 1989 and 1990 show a major reduction in the importance of deoxygenation and enrichment. These two might have been expected to have a much greater impact in 1990 because of the prolonged dry periods and low flows. This could point to a continuing improvement in the general state of water quality throughout the country.

The details for the past three years in Table 5 show decreases in problems from silage and slurry but increases from crop spray and farmyard waste. "Civil Works" which includes building operations, river drainage and other undertakings were greatly reduced. Fish kills attributed to enrichment after a serious increase in 1989 returned to the 1988 level.

It appears that the three traditional major causes, agriculture, sewage and industry, are coming under control and that other problems require greater consideration. Some of these, for example the perennial accidents involving discharges from water treatment plants or muncipal swimming pools, should respond ultimately to increased public awareness.

Possibly the most serious problem for the next few years will be that of "enrichment" where fish kills result from algal blooms arising from increased phosphate loadings in the watercourses. These derive partly from slurry or fertilizers and partly from inadequately treated domestic waste. Many farms in a catchment may be involved in enrichment from agriculture and improvements may require radical changes in the ways in which slurry is spread and fertilizer applied to the land. Domestic waste can be treated effectively but considerable expense is involved in

Table 1. Location of 52 fishkills reported in 1990 and estimated extent of damage

Date	Water	Location	Extent (metres)
EASTERN REGION (14)			
Jan 31	Mattock	Melifont O0279	5000
May 23	Skane	Ballinter N8962	1500
May 31	Tolka	Glasnevin O1537	2000
Jun 4	Dee	Ardee N9691	3000
Jun 7	Cull	Forkill J0114	3000
Jun 18	Murmod	Gehadossan N6296	4000
Jun 18	Dee	Ardee N9691	10000
Jul 5	Owenavarragh	Ballycanew T1452	20000
Jul 18	Fear English	Kilshancoe N7538	50
Jul 30	White	Dunleer O0688	1000
Aug 22	Barora	Maxwells Cross N7185	1000
Sep 9	Lough Naglack	Carrickmacross H8502	0
Sep 10	Dodder	Tallaght O1027	1500
Sep 10	Yellow	DonaghpatrickN8474	5000
SOUTHERN REGION (15)			
Apr 29	Gradogue	Mitchelstown R8113	2000
May 1	Nore	Inch S5354	500
May 16	Blackwater	Fermoy W8198	100
Jun 6	Black	Derryhogan S1953	1000
Jun 21	Anner	Ballydavid S3336	2000
Jun 24	Multeen	Hollyford R9150	3000
Jun 26	Multeen	Rossmore R9954	5000
Jun 18	Nore	Curraganeen S1482	10000
Jul 12	Anner	Twomilebridge S2423	900
Jul 13	Erkina	Rathdowney S2978	3000
Jul 23	Nore	Bennetsbridge S5549	1000
Jul 31	Grand Canal	Rathangan O6718	50
Jul 31	Slate	Rathangan	100
Aug 2	Greese	Timolin S7994	1000
Aug 5	Ballybeg	Killeen S1951	4000
SOUTHWESTERN REGION (5)			
Apr 1	Abisdealy Lake	Skibbereen W1332	0
May 3	Bandon (trib)	Kilmacsimmon W5644	300
May 29	Dirty	Dunmanway W2253	4000
Aug 26	Bandon	Ballinee W1354	100
Dec 2	Finow	Finow Bridge W0185	2000
SHANNON REGION (7)			
Mar 26	Annagh	Aghy Bridge R1075	1000
May 2	Tullaleague	Talbots Bridge R1019	0
May 23	Bellsgrove	Ballyheelan N4287	3000
Jun 26	Camlin	Clondra N0675	1000
Jul 25	Nenagh	Nenagh Bridge R8679	5000
Aug 16	Clonshire	Drehidnaman R4445	100
Sep 11	Abbey	Limerick R5757	100
WESTERN REGION (3)			
Mar 24	L.Nacoagarrow(trib)	Ballinahinch L8346	1000
Apr 24	Corrib	Claddagh M2924	100
May 15	L. Hacket	Caherlistrane M3049	0
NORTHWESTERN REGION (2)			
May 30	Owenmore	Gurteen	1000
Jun 8	Monastery	Ballinafad G7808	5000
NORTHERN REGION (6)			
Jun 6	Dromore(trib)	Castleblaney H8220	1000
Jul 20	Bushy (trib.)	Cross Keys N47 97	3000
Aug 31	Lough Gowna	Gowna N3090	0
Aug 31	Lough Oughter	Killeshandra H3404	0
Sep 12	Inner & Dromore Ls	Cootehill H1661	0
Sep 14	Crossdoney Stream	Crossdoney H0037	5000

Table 3. Causes of fish kills in 1990; "C" indicates confirmation.

AGRICULTURAL (23)	Eastern Region (8)		
Jan 31	Mattock	Pig slurry	C
Jun 4	Dee	Pesticide	
7	Cull	Silage	C
18	Murmod	Silage	C
18	Dee	Pesticide	
Jul 5	Owenavarragh	Farmyard waste	C
30	White	Silage	
Sep 10	Yellow	Agrichemical spillage	
	Southern Region (6)		
Jun 6	Black	Silage	C
21	Anner	Silage and slurry	C
24	Multeen	Silage and slurry	
Jul 31	Grand Canal	Farmyard waste	C
31	Slate	Farmyard waste	C
Aug 2	Geese	Farmyard waste	
	Southwestern Region (2)		
May 3	Bandon	Herbicide from sprayer	
29	Dirty	Silage	C
	Shannon Region (3)		
May 2	Tullaleague	Pig slurry	C
23	Bellsgrove	Pig slurry	C
Aug 16	Clonshire	Farmyard waste	
	Northwestern Region (1)		
Jun 8	Monastery	Silage	
	Northern Region (3)		
Jun 6	Dromore (trib)	Silage	C
Jul 20	Bushy (trib)	Farmyard waste	C
Sep 14	Crossdoney Stream	Farmyard waste	
CIVIL WORKS (1)	Southern Region (1)		
Jul 23	Nore	Drainage of millrace	C
SEWAGE (1)	Southern Region (1)		
May 1	Nore		
DEOXYGENATION (1)	Eastern Region (1)		
Jul 18	Fear English		
ENRICHMENT (4)	Eastern Region (1)		
Sep 9	Lough Naglack		C
	Northern Region (3)		
Aug 31	Lough Gowna		
31	Lough Oughter		
Sep 12	Inner & Dromore Ls	Anabena bloom	
INDUSTRIAL (14)	Eastern Region (3)		
May 31	Tolka		
Aug 22	Barora		C
Sep 10	Dodder	Diesel oil spillage	C
	Southern Region (5)		
Apr 29	Gradogue		C
May 16	Blackwater		
Jul 12	Anner		
13	Erkina		C
Aug 5	Ballybeg		C
	Shannon Region (3)		
Mar 26		Cement lorry washing	
Jun 26	Camlin		
Sep 11	Abbey	Acid effluent	C
	Western Region (3)		
Mar 24	L Nacoagarrow (trib)	Concrete dumping	C
Apr 24	Corrib	Oil leak	C
May 15	L Hacket	Toxic waste	
WATERWORKS (1)	Southern Region (1)		
Jun 26	Multeen	Alum from water treatment	C
	Southwestern Region (1)		
Dec 2	Finow	Chlorine escape	C

UNKNOWN CAUSES (6)

Eastern Region (1)	Shannon Region (1)	Southern Region (1)
May 23 Skane	Jul 7 Nenagh	Jun 28 Nore

Southwestern Region (2)	Northwestern Region (1)
Apr 1 Abisdealy Lake	May 30 Owenmore
Aug 26 Bandon	

Figure 1

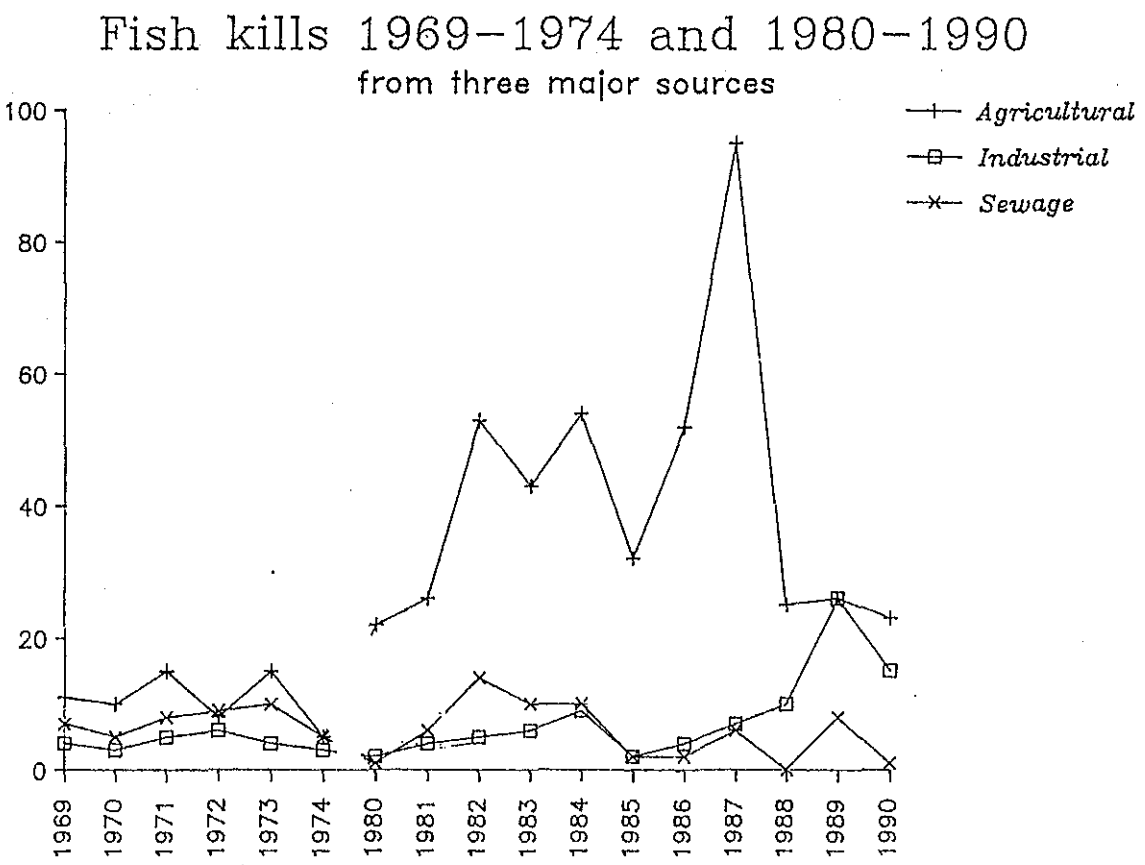
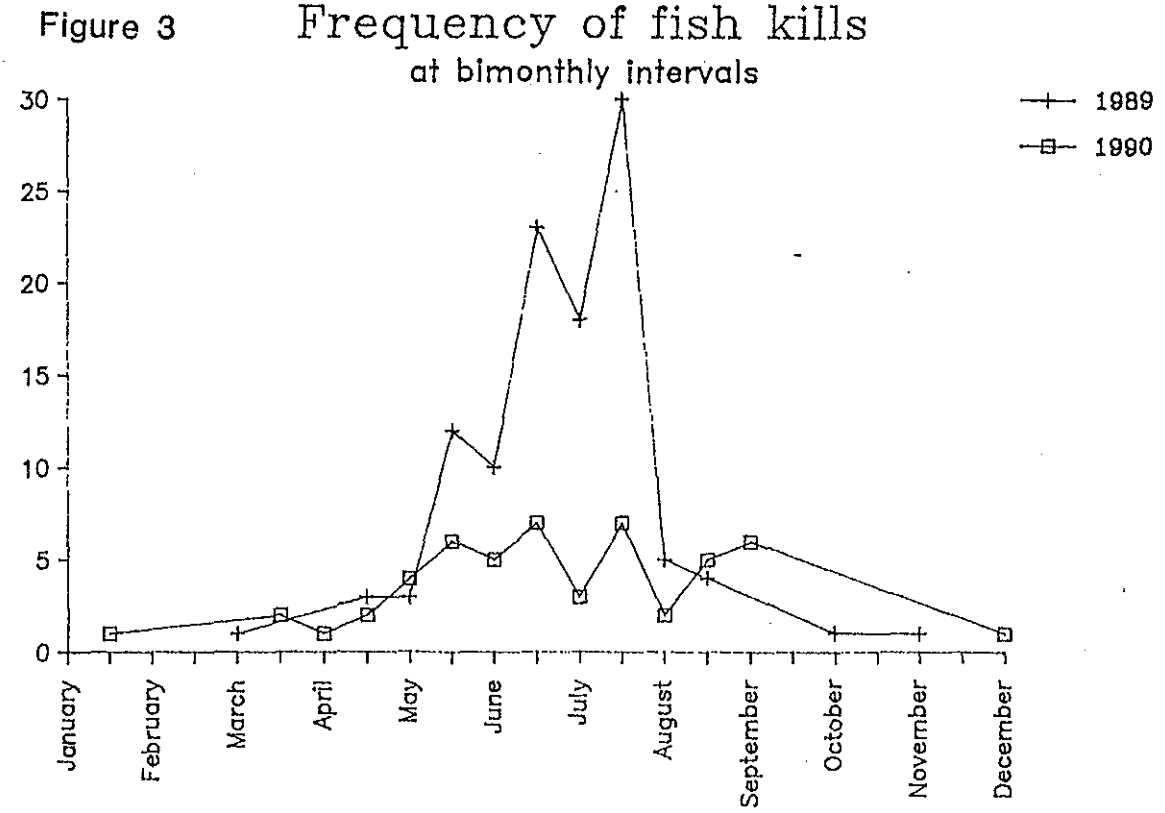
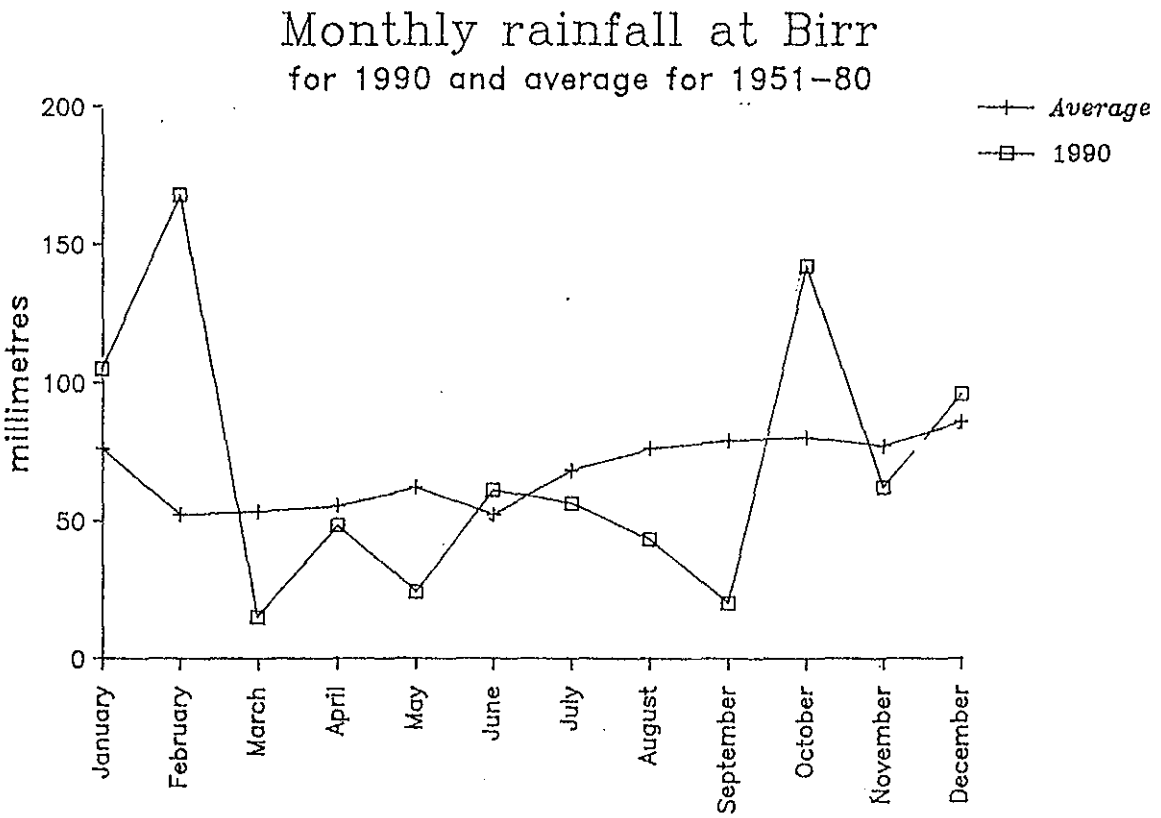

Fish kills 1969–1974 and 1980–1990
from three major sources
Agricultural
Industrial
Sewage
100
80
60
40
20
0
1969
1970
1971
1972
1973
1974
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990

Figure 3


Frequency of fish kills
at bimonthly intervals
1989
1990
30
25
20
15
10
5
0
January
February
March
April
May
June
July
August
September
October
November
December


Monthly rainfall at Birr
for 1990 and average for 1951–80
Average
1990
millimetres
200
150
100
50
0
January
February
March
April
May
June
July
August
September
October
November
December